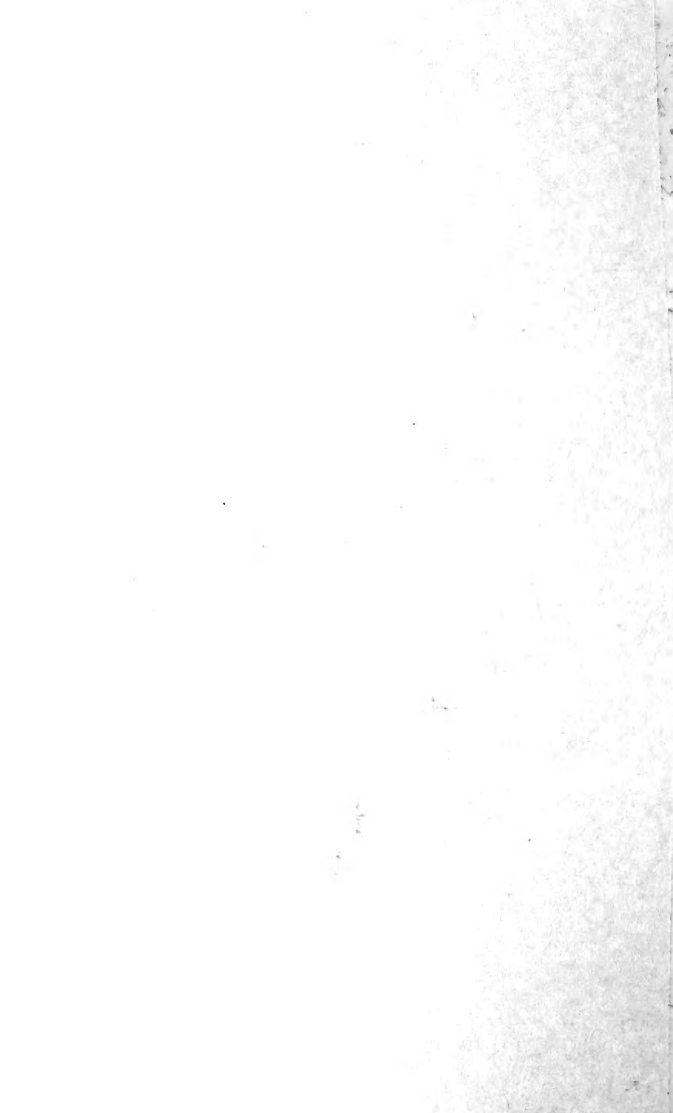


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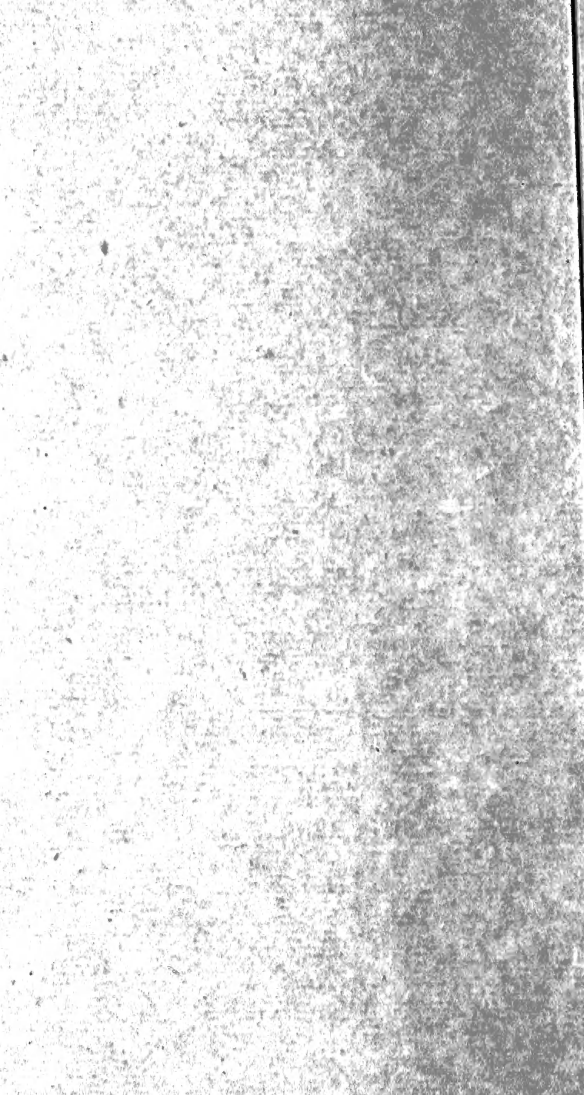
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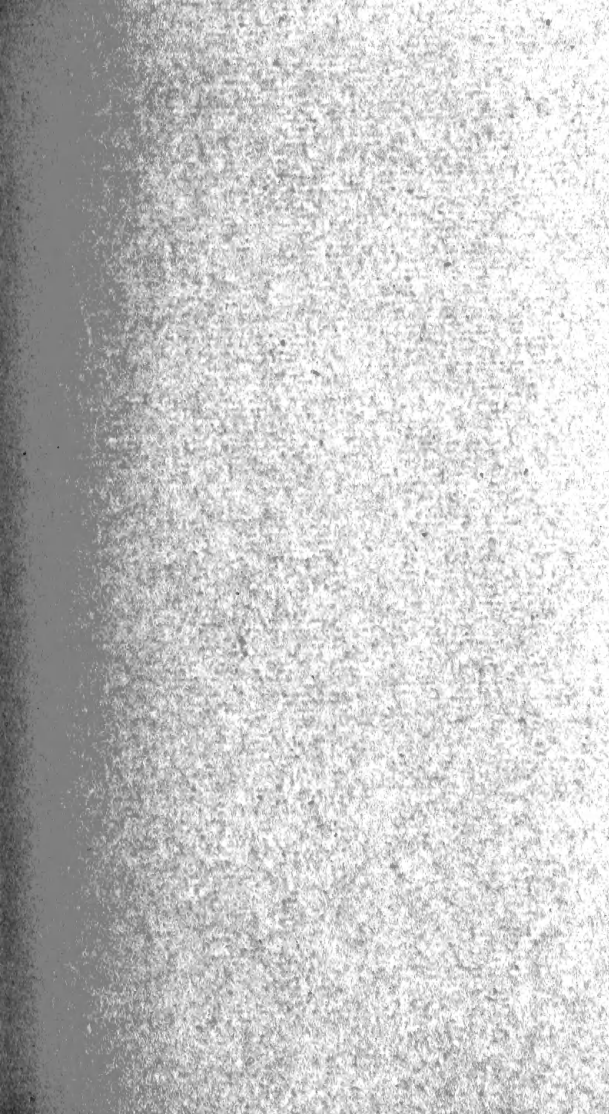




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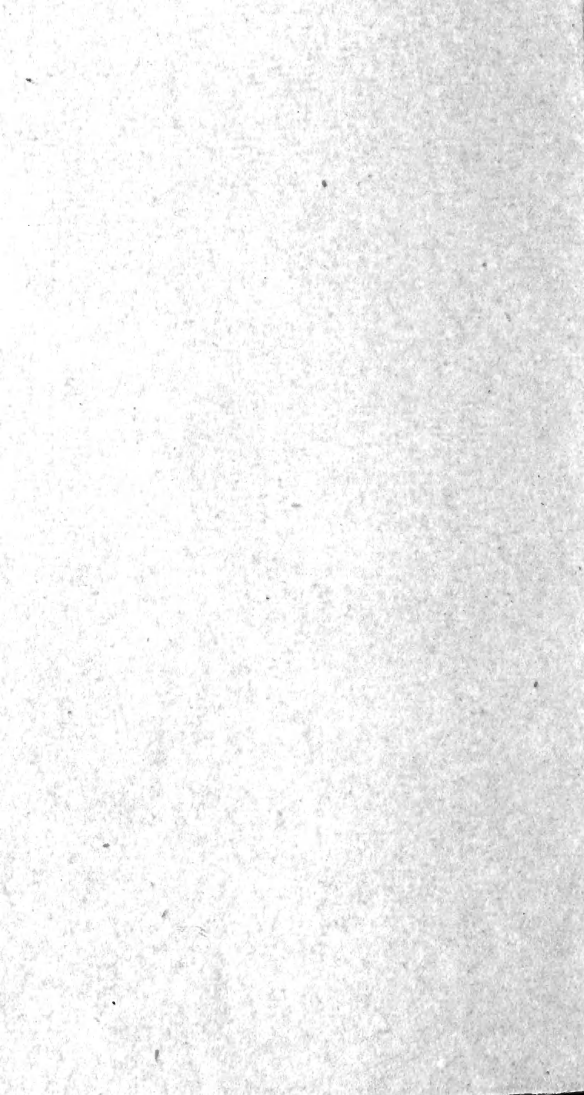




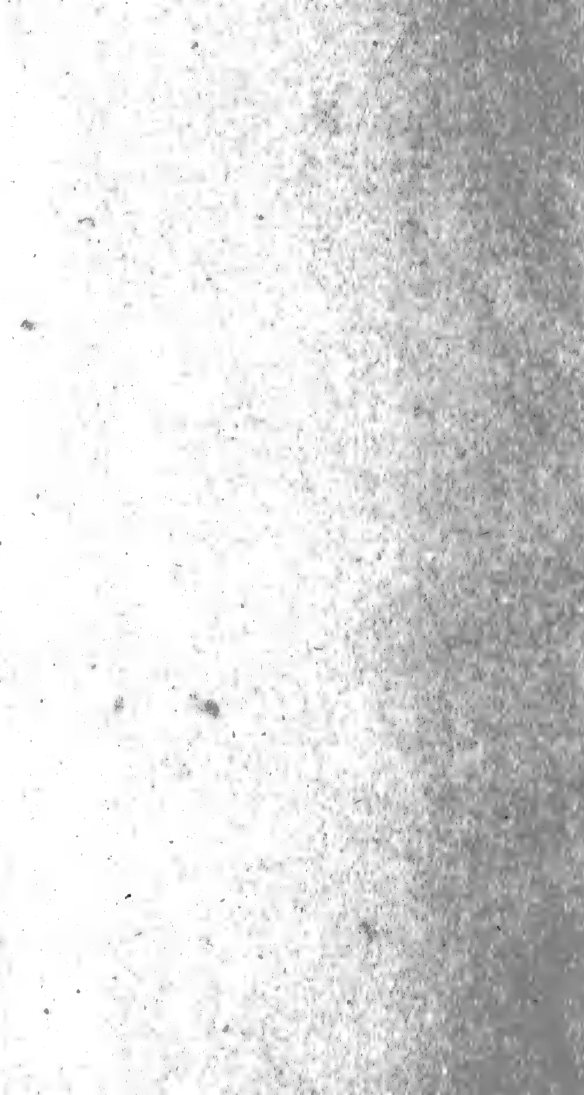












Francis Latham

FRANC

Francis Latham

Francis Latham

FRANCIS



“ These are thy glorious works, Parent of good,
Almighty ! Thine this universal frame,
Thus wond’rous fair ! thyself how wond’rous then ! ”

BEAUTIES

OF THE

CREATION:

OR, A NEW

MORAL SYSTEM

OF

NATURAL HISTORY;

DISPLAYED IN THE

MOST SINGULAR, CURIOUS AND BEAUTIFUL

QUADRUPEDS,	:	TREES,
BIRDS,	:	SHRUBS &
INSECTS,	:	FLOWERS.

DESIGNED TO INSPIRE YOUTH WITH HUMANITY TOWARDS
THE BRUTE CREATION, AND BRING THEM EAR-
LY ACQUAINTED WITH THE WONDERFUL
WORKS OF THE DIVINE CREATOR.

By GEORGE RILEY.

Who can this Field of Miracles survey,
And not with *Galen* all in rapture say,
Behold a GOD! adore him, and obey.
Blackmore on the Creation.

THIRD AMERICAN EDITION.

WORCESTER :

PRINTED BY ISAIAH THOMAS, JUN.

SOLD BY HIM AT HIS BOOKSTORE, OPPOSITE THE GAOL.

September—1798.

Advertisement.

THE study of NATURAL HISTORY, has of late, become too important a branch in Polite Literature, to be neglected; it at once refines the *taste*, softens the *manners* and improves the *heart*:—It leads the rising generation to just ideas of their CREATOR, and instils within them, principles of humanity towards all:—

————— Who can paint
Like Nature?—Can imagination boast,
Amid his gay creation, hues like these?
And can he mix them with that matchless skill,
And lay them on so delicately fine,
And lose them in each other, as appears
In ev'ry bud that blows?-----Thompson's *Spring*.

The education of our youth is certainly of the utmost importance, and demands the earliest attention; and as the mind begins to expand, and make observations upon the various causes of Nature, an immediate application to the study of Natural History, cannot

ADVERTISEMENT.

I think fail of establishing those principles, which will rouse their imaginations, and fire their bosoms to noble pursuits.

* * * * *

“Go, from the Creatures thy instruction take :
Learn from the birds what food the thickets yield ;
Learn from the beasts the physic of the field ;
Thy arts of building from the bee receive ;
Learn of the mole to plough, the worm to weave :
Learn of the little nautilus to sail,
Spread the thin oar, and catch the driving gale.
Here too all forms of social union find,
And hence let reason, late, instruct mankind :
Here subterraneous works and cities see ;
There towns aerial on the waving tree.
Learn each small people's genius, policies,
The ant's republic, and the realm of bees ;
How those in common all their wealth bestow,
And anarchy without confusion know ;
And these forever, tho' a monarch reign,
Their sep'rate cells and properties maintain.”



Preface.

NATURAL HISTORY, in its general sense, comprehending the whole produce of the Creation, as consisting of BEASTS, BIRDS, FISHES, INSECTS, REPTILES, FLOWERS, PLANTS, STONES, FOSSILS and MINERALS, it was impossible to include, in a single Volume like the following, even the names of the different articles : We were therefore obliged to make a selection of a part, which we considered the most curious, interesting and worthy the attention of the pupil studying that Science of Nature.

IN the progress of the Work, these BEASTS, BIRDS, INSECTS and FLOWERS, are particularly described, that are distinguished by any peculiar characteristics of beauty, utility, curiosity, or medicinal virtue.

IT has been our endeavour to trace more those grand outlines of sublime wonders that elevate the heart to the Creator, than to descend to the minute investigation of a mere speculatist; for, in the work of the ingenious Blackmore,

Who can this Field of Miracles survey,

And not with GALEN* all in rapture say,

Behold a GOD! adore him, and obey!

* GALEN was professedly an atheist, until he providentially saw a human skeleton, which, considering attentively, with regard to the wisdom displayed in its structure, was the immediate cause of his not only believing in a God, but becoming a most zealous professor of religion.

THIS engaging subject, much as it is neglected, is, of all others, the most necessary to finish a polite education. It softens and humanizes the mind imperceptibly ; for it leads us to this sublime truth.....That nothing is created in vain ; and teaches us, that a knowledge of GOD is the most noble, and should therefore be the ultimate object of all our pursuits. This divine science is therefore the only means by which we can know ourselves, and be grateful for those blessings that are created for our use, support and protection.

WE have been more anxious to vindicate the dignity of nature, than to debase it with peurile researches. Whenever any grand deviation was observable in one beast or bird from another, we made free to search for the final cause, independent of former opinions,

however sanctioned by authority, when they happened not to be congenial with our own sentiments. To trace the final causes, or the reasons of the difference in the various classes of birds and beasts, is the first and most essential object to pursue in the study of nature. To look for differences, as some have done, only to gratify a prepossession for novelty, without improving the mind or amending the heart, is to turn Natural History into a raree-show, instead of adopting it as a science.

To avoid that tedious detail of description which tires by its sameness, and confuses by its intricacy, we have specified only those characteristics that were essential to notice, in order to be able to distinguish one animal from another: But, in this, the peculiar beauties are more particularly noticed than any deviation

of colour or form, that had no quality to recommend it to our attention.

WITH respect to the arrangement, we have endeavoured to present it as systematically to our readers, as an abridgment could possibly admit. That the student might know of what species every bird and beast was, which this Volume contains, they are described in the order of their respective classes. Whenever there were more of a species than the limits of the Work would admit of being described, they are specified by name, according to the most accurate naturalists.

IT being the desire of the Proprietor of this Work to render it as complete as in his power, he has taken all possible care to give the most correct descriptions of the different BEASTS, BIRDS, INSECTS and FLOWERS. He hopes

therefore his endeavours to render it instructive and interesting, will be received as a small token of that respect he has for the public patronage he now ventures to solicit.



NATURAL HISTORY.

PART I.

QUADRUPEDS.

THEIR GENERAL NATURE.

QUADRUPEDS, after **MAN**, in Natural History, require the next attention, and for the following reasons. Being of similar structure with ourselves, having instincts and properties superior to all other parts of animated nature, affording great assistance to man, and sometimes exercising the greatest hostilities, must render them the most interesting part of the creation, and claim the first attention of the naturalist.

SIMILITUDE TO MAN.....Like us, they are elevated above the birds, by their young being produced alive ; above the class of fishes, by breathing through the lungs ; above insects, by blood circulating through their veins ; and mostly above all parts of the creation, by being partly or entirely covered with hair. Since quadrupeds so nearly approach us in animal perfection, how little reason have we to be vain of our corporeal qualities !

FIGURE.....The heads of quadrupeds are generally adapted to their mode of living. In some, it is sharp, to enable them to turn up the earth, where they find their food deposited ; in others, it is long, in order to

afford room for the olfactory nerves ; in many, it is short and thick, to strengthen the jaw, and qualify it for combat. Their legs and feet are entirely formed to the nature and exigencies of the animal. When the body is heavy, the legs are thick and strong ; when it is light, they are active and slender. Those that feed on fish, are made for swimming, by having webbed feet ; those that prey upon animals, are provided with claws, which they can draw and sheath at pleasure ; but the more peaceable and domestic animals are generally furnished with hoofs, which, being more necessary for defence than attack, enable them to traverse the immense tracts which they are destined to pass over, either to serve man, search for food, or avoid hostility.

DISPOSITION FOR PREY.....Beasts of prey seldom devour each other. Nothing but extreme hunger can induce them to commit this outrage against nature ; and, when they are obliged to seek such subsistence, the weakest affords to the strongest but a disagreeable repast. In such cases, the deer or goat is what they particularly seek after, which they either take by pursuit or surprise.

NATURAL SAGACITY.....In countries uninhabited by man, some animals have been found in a kind of civil society, where they seemed united in mutual friendship and benevolence : But no sooner does man intrude upon their haunts, than their bond of society is dissolved, and every animal seeks safety in solitude.

CLOTHING OF ANIMALS.....In the colder climates, they are covered with a fur, which preserves them from the inclemencies of the weather ; in the more temperate, they have short, and in the warmer climates they have scarcely any hair upon their bodies. Thus we perceive that they are provided with clothing, according to the nature of their situation.

FEROCITY.....Where men are the most barbarous, animals are the most ferocious. Those produced in climates of extreme heat, possess a nature so savage, that they are scarcely ever tamed.

FOOD.....The place, as well as the nature of their food, is adapted to the size and species of the animal. Those feeding in vallies are generally larger than those that seek their food on mountains. In warm climates, their plenteous and nutritive food renders them remarkable for bulk. Milk is their first aliment.

PRODUCE.....Beasts that are large, useless, and formidable, produce but few at a time, while those that are small, serviceable and inoffensive, are more prolific. This seems to be adapted with the most admirable proportion ; for, were the smaller and weaker to have less offspring, their race might be destroyed, by being so frequently made the prey of stronger animals.

COURAGE.....In defence of their young, no danger or terror can drive animals from their protection. Such as have force, and subsist by rapine, are most formidable in their ferocious courage.

GENERATION....Each species of quadrupeds bring forth their young at the time when nature most plentifully affords them their respective nutriment. Those animals which hoard up provisions for the winter, produce their young in January, by which time they are enabled to collect sufficient subsistence for their offspring. Quadrupeds which are called *oviparous*, from being hatched from eggs, such as the crocodile, turtle, &c. are the most prolific, being no sooner freed from the shell than they attain their utmost state of animal perfection.

Every species of animal has its peculiar cry, by which they distinguish each other, and communicate the general expressions of their passions, as fear, joy, desire, &c. Thus has the all wise, bountiful and divine creator, in his infinite wisdom, formed a race of animals for the use of mankind, and granted us dominion over them, which should never be exercised but with the greatest humanity.

HORSE.

OF all quadrupeds, the horse is the most generous, serviceable and beautiful. There is none to which man is more indebted. Wild horses herd together in assemblies of five or six hundred, and depute one as a centinel to guard the rest while sleeping. Arabia is the most famous for this animal in its wild state. But the English horse excels all in size, utility and swiftness. It is longer lived than the Barb, and more hardy than the Persian. The famous Childers was so fleet as to run a mile in a minute. The English hunters are allowed to be the most useful horses in the world. To give a description of this well known animal is unnecessary, as there is scarcely a country in which he is not to be found. Spain, Italy, Denmark, Germany, Hungary, Holland, Flanders, France, Crete, Morocco, Turkey, Persia, India, China, Tartary and Arabia, abound with various species of them, which differ according to the soil and climate of the country. But the general received opinion is, that the native clime of this noble animal is Arabia, to which all the countries above mentioned are indebted for the different breeds of horses they possess.

Its disposition to war caused it to be consecrated to Mars, the god of battle.

Of their hides are made collars, and all kinds of harness; their manes and tails are used in perukes, lines for angling, covering for chair seats, cords, floor cloths and a variety of other articles.

Although they are endowed with vast strength and great powers, yet they seldom exert either to the prejudice of their masters; on the contrary, they will cheerfully encounter the greatest fatigues for their benefit. They fear and love the human race, and are of a very benevolent disposition. And yet, notwithstanding all the good qualities of this noble and generous animal, when he is so enfeebled by age, and worn down by the severe drudgery of his lordly master, as to be incapable of contributing any longer to

his pleasure, his ambition, or his avarice, he is (as if ingratitude was peculiar to the human species) sold for scarcely the worth of his bridle. In this state of lamentable existence, he is consigned to the cruel treatment of some inhuman wretch, who chastises him for that weakness incident to his old age, or which he has acquired in the servitude of his former master, and thus tortures the remnant of his life, which should wear it only for past services, be cherished with the most tender care and attention.

Such is the strength of the English draught horse, that in London they have been seen to draw three tons weight. In Yorkshire, the pack horses usually carry a burthen of 420lb over the highest hills.



ASS.

THIS animal resembles the horse very nearly in form, but, being of a distinct species, in a state of nature it is entirely different. It is found wild in the deserts of Lydia and Numidia, where it is caught with traps. Of their skins, shagreen leather, and other valuable articles are manufactured. The plantain is their favourite vegetable. Their scent is so acute, that they are capable of smelling their driver or owner at a great distance, and will even distinguish him in a crowd. In proportion to his size, he is stronger than the horse, and supported with much less care and sustenance. In some countries they are so large, that in Spain a jackass is frequently seen fifteen hands high. Of all animals covered with hair, the ass is the least subject to vermin. His period of existence is from twenty to twentyfive years; and, although he can endure much more fatigue and hardship than a horse, he has much less sleep. It is related of this animal, that he will never stir if he blinded.

The ass was originally imported into America by the Spaniards, who now hunt them for their diversion.

In his natural state, he is fleet, fierce and formidable, but when domesticated, he is the most gentle of all animals, and assumes a patience and submission even humbler than his situation. He is very temperate in eating, and contents himself with the refuse of the vegetable creation. As to drink, he is extremely delicate, for he will slake his thirst at none but the clearest brooks, and those to which he is most accustomed. When young, he is sprightly, and tolerably handsome; but age deprives him, as well as all other parts of animated nature, of those qualities; he then becomes slow, stupid and obstinate. The she ass goes eleven months with young, and never produces more than one at a time.

The ingenious author of the *Spectacle de la Nature*, observes, in substance, that though he is not possessed of very shining qualities, yet what he enjoys are very solid; that the want of a noble air hath its compensation in a mild and modest countenance; that his pace is uniform, and, although he is not extraordinary swift, he pursues his journey a long while without intermission; and that he is perfectly well contented with the first thistle that presents itself in his way; in short, that this indefatigable animal, without expense or pride, replenishes our cities and villages with all sorts of commodities.

With respect to their general disposition, the same author informs us, "That the ass resembles those people who are naturally heavy and pacific, whose understanding and capacity are limited to husbandry or commerce, who proceed in the same track without discomposure, and complete, with a serious and positive air, whatever they have once undertaken."

The medicinal virtues of asses milk, in restoring health and vigour to our debilitated constitutions, might alone entitle this harmless and inoffensive animal to a kinder return, than it generally experiences from their inhuman and ungrateful masters.

ZEBRA.

THIS animal is the most wild and beautiful in nature, and is principally found in the southern parts of Africa. It is said to surpass all others in swiftness, and even stands better and firmer upon its legs than the horse. There was one in England that would eat bread, meat and tobacco. It differs from the wild ass, with which it has been frequently confounded, in the description given of it by some naturalists. In shape, it more resembles the mule, than the horse or the ass: It is less than the former, and longer than the latter: Its ears are longer than those of the horse, and shorter than those of the ass: It has a large head, a straight back, well placed legs, and tufted tail. The skin is close and smooth, and the hind quarters are round and well formed. The male is white and brown; the female white and black. The colours are so regularly striped, that they appear to be painted, and resemble so many ribbons laid over its body; so that, at a small distance, the zebra appears to have been dressed by art, instead of being so admirably adorned by nature.



MULE.

THIS animal is bred between a horse and a she ass, or a jackass and a mare. In Spain, where they are used to draw people of the first distinction, they are frequently sold at fifty or sixty guineas each. The common Mule is very healthy, and lives about thirty years.

RUMINATING ANIMALS

ARE such as are distinguished for chewing the cud, and being the most mild and easily tamed. The ferocious or the carnivorous kinds, seek their food in gloomy solitude; but these range together in herds, and the very meanest of them unite in defence of each other. The food of ruminating animals being easily procured, they seem more indolent, and less artful than the carnivorous kinds, or those which feed on flesh.



BULL, OX & COW.

OF all ruminating animals these are first in rank, both with respect to size, beauty and service. Many of our English peasants have only a cow, from which they obtain a livelihood. Cows improve the pasture which affords them their nourishment. Their age is calculated by their horns and teeth. Of all creatures, this animal is most affected by difference of soil, which being luxuriant, increases their growth to a considerable size, while in more sterile countries they are proportionally diminutive. In Great Britain, the ox is the only horned animal that will apply his strength to the service of mankind. The ox, in particular, will grow to a prodigious size, an extraordinary instance of which is, at this time to be seen in London; he was bred at Gedney, in the county of Lincoln, and is allowed by judges to be much the largest and fatest ox ever seen in England; his beef and tallow alone being computed to weigh 350 stone, or 2800 pounds weight.

There is no part of this animal without utility; the blood, fat, marrow, hide, horns, hoofs, milk, cream,

whey, urine, liver, gall, spleen and bones, have each their particular qualities. The hide when tanned, is manufactured into boots, shoes, and various other accommodations in life; vellum and goldbeater's skin are also obtained from these animals: The hair, mixed with lime, is used to cement our buildings: Combs, knife handles, boxes, buttons, drinking vessels, &c. are made of their horns, which are also used as antidotes to poison, the plague and small pox: Glue is made from the chips of their hoofs, and the parings of the raw hides. Their bones are an excellent substitute for ivory; and their feet afford an oil, so generally known under the name of *neat's foot oil*, that it needs no description here. The blood is an excellent manure for fruit trees, and the chief ingredient of Prussian blue: The gall, liver, spleen and urine, are used in medicine. Milk, cheese, cream and butter, are too common to require particular mention. The flesh is of two sorts, namely, veal and beef, which, being dressed various ways, is calculated to invigorate the weak, support the laborious, and gratify the voluptuous.

The Urus, or Wild Bull, is generally found in Lithuania, a province of Poland.

There are other species of the cow kind, such as the Bison, Bonafus, Zebu, Beevehog, Buffalo and Siberian Cow.



BUFFALO.

THE Buffalo, being more clumsy, is less beautiful than the cow. His skin is also harder, thicker, blacker and thinner of hair: His flesh is hard, black and disagreeable, both to the taste and smell: The milk, though abundant, is not so good as that which the cow affords; in the warm countries, however, it is used to make cheese and butter. The hide, from its

thickness and impenetrability, is dressed, and forms an article called *buff leather*, after his name.

Two of these animals, yoked together, will draw more than four strong horses. When pursued, they will often swim over the largest rivers with great facility. They are found wild in many parts of Africa and Asia, and are likewise very common in Italy, from whence they were brought into Lombardy, A. D. 591. They grow to twice the size of our largest oxen, and their horns are so large, that a pair is to be seen in the museum which measure six feet, six inches, and a half in length, weigh fortytwo pounds, and hold ten quarts of water in their vacuities. Aristotle, very properly, calls these creatures wild oxen.

In the western parts of Florida, on this side the Mississippi, the buffalo is hunted after the following manner: The hunters range themselves in four lines, forming a very large square; they then set fire to the grass, which is long and dry; the animals draw closer together, as the fire runs along the lines, of which they are much afraid, and naturally fly from it, until they get quite close together, they then attack them briskly, seldom suffering any to escape. At these hunting matches they generally kill from a thousand to fifteen hundred of these animals.

The buffalo, like other animals that feed on grass, is inoffensive when undisturbed; but, when wounded, or even fired at, their fury is ungovernable.

In India, there is a smaller kind of buffalo, which they make use of to draw their coaches.

In the northern parts of America there is another animal, larger than the ox, which has short black hair, horns, a large beard, and a head so covered with hair that he makes a most formidable appearance.



ANIMALS of the SHEEP and GOAT KIND.

ALTHOUGH this species comprehends many animals of a similar nature, they differ with regard to their bodies, horns, food and covering.

The utility, and inoffensive nature of these animals, is a proof that they have been long reclaimed from their wild state, and adapted to domestic purposes. They both appear to require protection from man, whom they reward with the greatest favours; they seem indeed, to court his society. Though the sheep is most serviceable, the goat has more attachment and sensibility. In the earliest ages, the goat appears to have been the greater favourite, and still continues so amongst the poor. But the sheep has long been the principal object of human care and attention; we shall therefore begin with the SHEEP.



SHEEP.

THIS animal, in its tame state, is the most harmless and defenceless. When wild, it is said to be of vast swiftness, and only found in great flocks. As soon as they are attacked, they form a ring, into the centre of which the ewes fall, where they are defended by the rams in the most vigorous manner. The woolly sheep is only found in Europe, and some of the temperate provinces of Asia. When fat, it is awkward in its motions, easily fatigued, and frequently sinks under the weight of its own corpulence, and rich fleeces. There is no part of this admirable animal, but what has its particular use.

When two rams meet, they engage very fiercely. Every ewe knows its lamb, and every lamb the bleating of its ewe, even amidst thousands. In England, they chiefly feed on the downs, in pastures, young springing corn lands, or turnip fields; but the downs have, by long experience, been found to prove by far the most beneficial, on account of the air and dryness of soil, no animal being so subject to the rot, as sheep, if fed on marshy land. The whole flock of ewes, wethers and lambs, are sheared once in a year. Wethers have generally more and better wool than the ewes. Such is their utility in agriculture, that an hundred sheep will manure eight acres of ground.

In Iceland they have a species of this animal, called Manyhorned sheep; they are of a dark brown colour, and, under the outward coat of hair, have a fine, short, soft fur, resembling wool.

In Spain, the sheep produce a wool, superior to that of any other country. It is of so excellent a quality, that our hatters and clothiers are obliged to purchase it at a very great price, in order to enable them to manufacture some of their estimable articles.

The great utility of sheep to Greatbritain may be seen by the following moderate calculation of fleece wool annually produced by their growth.

According to the calculation of Young, in his *Six months Tour*, there are 466532 packs of wool manufactured in Greatbritain and Ireland, and 285,000 packs exported unmanufactured. The value of which, estimated at an average of £7, per pack, amounts to £5,260,724. The quantity manufactured is supposed to amount to the sum of £12,434,855, annually, which is circulated amongst industrious artisans. As the whole value of British manufacture, at the above period of calculation, was said not to exceed £44,350,529, this article alone may be considered as equal in value to one third of all the rest of their produce and manufactures. But what evinces still more the value of sheep to Greatbritain and her dependencies, is, that the wool affords employment to 1,576,134, out of 4,250,434, people, which are supposed to be the number of the laborious part.

Broadtailed sheep are found in Tartary, Arabia, Persia, Barbary, Syria and Egypt. Such is the weight

of wool on their tails, that Pennant says, some have been known to weigh fifty pounds; to preserve which from wet, dirt, or other injury, they are usually supported by a small board running upon wheels.

Of the sheep kind, beside these, there are the Strep-ficheros, found in Crete, and other islands of the Archipelago, the Guinea sheep, and the Moufflon.



GOAT.

THIS animal differs most essentially from the sheep, in being covered with hair instead of wool. Its chief delight is to climb the highest and steepest precipices. They are neither terrified at storms, nor incommoded by rain. According to the climate, they will have from two to five kids. Their milk is sweet, nutritive and medicinal.

The goat is found in every part of the world: Every clime seems congenial with its nature: For which reason it may justly be called a citizen of the world. Its age seldom exceeds ten or twelve years.

The Ibex, or Stone Goat, is said to have horns two yards long, which increase by knots annually.

Of the several distinct species of this animal, there are, the Goat of Angora, Syrian Goat, the small American Goat, Blue Goat, Juda and Siberian Goat, and the Greenland Goat, the latter of which has horns an ell long.



CAMELOPARD.

THE camelopard somewhat resembles the deer in form, without its symmetry. It has been found eighteen feet high, and ten from the ground to the top of
C

the shoulder. The hinder parts are so low, that, when standing upright, it greatly resembles a dog sitting. Neither the form nor the temper of this animal adapts him for hostility or defense; he is therefore timorous and inoffensive, and, notwithstanding its size, will endeavour to avoid, rather than attack an enemy. It is chiefly a native of Ethiopia. The extraordinary length of his fore legs obliges him to divide them when he feeds on vegetables; to avoid which trouble, he subsists mostly on the leaves of trees. It is very rare in Europe; but in earlier times it was known to the Romans, as, among the collection of eastern animals, made on the celebrated Prænestine pavement, by the direction of Scylla, the camelopard is found. It was likewise exhibited by Julius Cæsar, in the Circean games.

It was supposed by the Greeks to be generated between a camel and a leopard, from whence it derives its name. It is so uncommon, that not above one or two have been seen in Europe for many hundred years. Some have necks fifteen feet long. When they walk, they move both their fore legs together.



ANTELOPE.

IS principally distinguished from the goat and deer, by having its horns annulated and twisted, bunches of hair on the fore legs, the lower part being streaked with black, red, or brown, and the inside of the ears having three white streaks.

The Antelope generally inhabits the warmest climates, those of America excepted. It is equally active and elegant, timid, lively and vigilant. Like the hare, its hind legs are longest. It has also cloven feet, and permanent horns, like the sheep, which are smaller in the female than the male.

The chase of these animals is a favourite diversion in the East. In fleetness they exceed the greyhound, which frequently causes the sportsmen to train a falcon

to overtake them in the chase. Their swiftness has afforded many beautiful similies and allusions in the eastern poetry. The eye of the antelope is supposed to be the most beautiful of any animal in the world, blending brilliancy with meekness. Some of this species form themselves into herds of two or three thousand, and generally seek their food in hilly countries. Several systematic writers have erroneously ranked this animal among the goat kind; for it forms an intermediate genus between that species and the deer; the texture and permanency of the horns agreeing with the first, while their fleetness and elegance accord with the latter.

There is another species of this animal, called the Royal Antelope, or Little Guinea Deer, which is the least and most beautiful of all the cloven footed race. It is scarcely nine inches high, and the small part of its legs are little thicker than a goose quill. It is most delicately shaped, resembling that of a stag in miniature, except that the horns of the male (for the female has none) are hollow and annulated, as in the Gazelle kind. It has broad ears, and two canine teeth in the upper jaw. The colour is as beautiful as the symmetry of this little animal, being of a fine glossy yellow, except the neck and belly, which parts are perfectly white. It is a native of Senegal, and some parts of Africa. It is so active, that it will bound over a wall, twelve feet high. It is easily tamed, when it becomes very entertaining and familiar, but of so delicate a constitution, that it can bear none but the hottest climates.

Of antelopes there are, besides those before described, the following different species: Common, Blue, Egyptian, Bezoar, Hanassed, African, Indostan, White footed, Swift, Red, Striped, Chinese, Scythian, Cervine and Senegal Antelope.



ANIMALS of the DEER KIND.

ALTHOUGH the bull and stag do not resemble each other in shape and form, yet their internal structure is very similar. All the internal difference between them is, that the deer has no gall bladder, while the spleen is proportionally larger, and the kidneys differently formed.

The first animal of this species that seems to claim our attention, is the ELK,



ELK, or FEMALE MOOSE.

THIS animal is a native of both the old and new continent. In Europe it is called the elk, and in America the moose deer. It is sometimes taken in the forests of Germany and Russia; but they are found in great numbers in North America. Of the various accounts given of this animal, the following is esteemed the most authentic.

A female elk, only twelve months old, which was in the possession of the late *Marquis of Rockingham*, measured to the top of the weathers fifteen hands; the length, from nose to tail, was seven feet: It had a short neck, with a thick erect mane, and the body was covered with hoary black hair. It was brought from America, and therefore called a moose deer. As it was so young, we may conclude, that, in its wild and natural state, it grows to an amazing height. It is asserted by some, that in America it grows to the height of twelve feet. This animal is reported to be timorous, gentle and inoffensive. It swims and runs

with incredible swiftness. The elk delights in cold countries, where they feed on grass in summer, and on the bark of trees in winter. In snowy weather they assemble in herds, and seek the fir forests, where they remain, while they can find the least subsistence from the bark of the trees. At this time they are mostly hunted by the natives of New England, Nova Scotia and Canada, in America; by the inhabitants of Lapland, Norway, Sweden and Russia, in Europe; and by the inhabitants of the north east parts of Tartary and Siberia, in Asia. The chase of these animals frequently continues two or three days.

The flesh of the elk has an agreeable taste, and is said to be nourishing. The skin is so strong and thick, as to resist a musquet ball. Its horns are used for the same purposes as harts horns.

They were formerly used in Sweden to draw sledges; but criminals frequently availing themselves of their swiftness, to escape the pursuit of justice, the use of them was prohibited under very severe penalties.



REINDEER.

THIS is the most useful and extraordinary animal of all the deer kind. It is a native of the northern icy regions, and seems adapted by nature to serve that part of mankind who live near the pole. It inhabits further northward than other hoofed animal; for it is found in Spitzbergen and Greenland. But, in America, it is never seen farther southward than Canada. In Europe, they are also found in Samoidea, Lapland, and Norway. In Asia, they are seen as far as Kamtschatka and Siberia. This animal mostly supplies the wants of the Laplanders and Greenlanders; serving them as horses, to draw their sledges over the icy lakes and snowy mountains, which they do with incredible rapidity. Like the cow, they yield all the commodities

of milk, cheefe, and butter; and, as sheep, they furnish them a warm, though homely, clothing. The flesh serves them for food, their tendons for bowstrings, and, when split, for thread. So that from this quadruped alone, they derive as many advantages as we do from several. The height of a full grown rein deer is about four feet six inches. There cannot be stronger proof of the dispensations of divine providence, than in the food which is provided for this animal, when the snow clad face of his country seems to threaten him with famine. When not a blade of verdure can be found, on heath, valley, or mountain; trees, bounteously affording a black moss, prove to him a most ample sustenance. In the preservation of this animal, the Laplanders themselves are much interested; as, independent of their labourious services, the flesh of the rein deer is also their principle food.

What a contrast do these northern countries afford, when compared with those of our more clement and fertile climates! The Laplander is obliged to depend on the rein deer for food, clothing, and coveyance while we have almost the whole range of nature for our accommodation. Should not this advantage alone excite in us such a sense of superior happiness, as to render us ever grateful to that providence, whose distinguished bounties we enjoy?



STAG.

THE colour of this animal is generally of a reddish brown, with some black in his face, and a black lill down the hinder parts of the neck, and between the shoulders. The stag is very delicate in his food; and, during the winter and spring, seldom drinks. They go about eight months with young, but seldom produce more than one. They breed in May when they carefully conceal their young in the most secret thickets. This precaution is wisely dictated to them, from

their being exposed to so many formidable enemies such as the wolf, dog, eagle, falcon, osprey, and all animals of the cat kind. But the stag himself is the greatest enemy to the young of his species; inasmuch, that the hind, which is the female stag, accompanies the fawn during the summer, to preserve it from his depredations. Amongst all the enemies of this creature, Man seems to be the greatest; for in every age, and every country, human species have taken delight in the chase of it. Those who first hunted it from necessity, continued it afterwards both for health and amusement. Originally, the beasts of chase were the sole possessors of Great Britain; they knew no other constraint than the limits of the ocean, nor acknowledged any particular master. But, when the Saxons established the heptarchy, they were reserved by each sovereign for his own particular diversion. In those un-civilized ages, hunting and war were the only employments of the great; for their active and uncultivated minds felt no pleasure but in rapine or violence.

The other species of this kind are, the fallow, Virginian, porcine, roebuck, Mexican, and grey deer.

Stags are still found wild in the highlands of Scotland, but their size is smaller than those of England. They are likewise to be seen on the Moors bordering on Cornwall and Devonshire; and on the mountains of Kerry, in Ireland, where they greatly embellish the picturesque, romantic, and magnificent scenery, of the lake of Killarny.



FEMALE TIBET.

THIS creature, which is the female of the musk, gives name to the kingdom of Tibet, a province in China, where it is found, between the latitude of 45 and 60 degrees. These animals naturally inhabit the mountains that are covered with pines, delight in solitude and avoid mankind: When pursued, they as-

cend the highest mountains, which are inaccessible to men or dogs. It is very timid, and has such a quick sense of hearing, as to discover an enemy at a very great distance. The celebrated drug, called *Musk*, is produced from the male only, and is found in a bag about the size of a hen's egg, on the belly, which has two small crevices through which it passes. This drug, when first pressed out of the bag, appears like a brown fat matter; but it is greatly adulterated by the hunters and dealers, in order to increase its weight. These animals are so numerous, as to have afforded *Tavernier* 7673 musk bags, in one journey which he made of only three years. Those of Muscovy are reckoned good, though those found in the kingdom of Tibet are most valuable. The Russians and Tartars eat the flesh of the male, notwithstanding its strong taste. Musk was formerly in great esteem as a perfume; but having been since found of great utility in medicine, it is seldom used for any thing else. This animal is likewise found in the Brazils, in India, and in Guinea.



DROMEDARY.

THIS is the most temperate of all animals; but this disposition arises more from necessity, than from choice or natural moderation. He is so admirably formed to cross the parched deserts, that he will travel eight days without being thirsty. His hard hoofs are particularly adapted to travel on the sands of his native wilds. They are the most useful beasts of burthen in Arabia, none other being able to bear their loads, or endure the want of drink so long; to enable them to do which, nature has provided them with a fifth stomach, which serves as a servoir, from whence they draw sufficient to quench their thirst. Camels have been sometimes killed, in hopes of finding water to slake the parching thirst of the traveller. They are chiefly employed in assisting the caravans; and as the deserts

they cross afford little more than the coarsest weeds, they prefer them to the choicest pasture. He live forty or fifty years; is about six feet and a half high, and has callosities on each knee, which greatly ease him when he kneels down to deposit, or take up his load. A large camel will carry 1200 weight.

The difference between a camel and a dromedary is, that the former has two bunches on his back, the latter only one. There are also the Arabian camel, and the Llama camel of America. Camel hair is imported in great quantities for the use of painting.



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ANIMALS of the HOG KIND.

IN this kind, animals seem to unite in those differences which separate others.—They resemble the horse kind in their long heads, single stomachs, and the number of their teeth, which are forty four. Their cloven feet, and the position of the intestines, are similar to those of the cow kind. And, in their carnivorous appetite, numerous progeny, and chewing the cud, they resemble the claw footed kind.



HOG.

THE hog, in his nature, blends the rapacious with the peaceful kind; for, though he is furnished with arms sufficient to terrify most, as well as to put the bravest to defiance, he is inoffensive to all.

He is the most impure of all quadrupeds; has a most insatiate appetite, and is of a very sluggish disposition. He may be compared to a miser, who, while living is useless and rapacious, but when dead is considered a public benefit, by diffusing those riches he had not spirit to enjoy when living. The brutality of the hog is such, that they frequently devour their own offspring; and contrary to all other domesticated animals, when impelled by hunger. It is said to be more perfect in the internal formation than any other domestic animal. The thickness of his hide, and the coarseness of his hair, render him insensible to blows. He is naturally stupid, drowsy, and inactive; and, if undisturbed, will spend half his time in sleep, from which state he never rouses himself but to gratify his voracious appetite which, if sufficiently sated with food, would cause his body to become too heavy for his legs to support; it would still, however, continue feeding, either kneeling, or laying. A very re-

markable instance of the voracious disposition of this animal, is at this time to be seen in London, in a Warwickshire hog, which though but a little more than three yearsold, measures nine feet ten inches in length, five feet ten inches round the neck, and eight feet five inches in girth. His weight is ten hundred, two quarters and twentyfour pounds. His chief food is barley meal and potatoes, which he eats while lying on his side; but what is more remarkable of this surprising animal is, that he never drinks.

The hog is restless at every change of weather, and greatly agitated when the wind is high. He is subject to all the diseases incident to intemperance. When permitted to extend his thread of life, he will live to eighteen or twenty years. The sow goes four months, and will often produce fifteen young at a litter.

The tajacu, pecary, or musk hog, of South America has no tail; the navel is on its back; when wounded, it will call its tribe, which are never satisfied but in the destruction of their antagonists or themselves.

Of the hog, there are, the Guinea, Chinese, Ethiopian, Indian, hog rabbit, and hog cow.



RHINOCEROS.

THIS extraordinary creature inhabits Bengal, Siam, Cochin China, Quangsi, the islands of Java and Sumatra, Congo, Angola, Ethiopia, and the country as low as the Cape. It is next to the elephant in size and strength, and has a horn growing on his nose two feet long. It being our first pride to dedicate to truth, we purposely omit many fabulous accounts of this animal. Unless offended, they are very harmless. The flesh is said to be wholesome. From its having only one horn, though some have been found in Africa with two, this beast must certainly be the unicorn of holy writ, and the ancients. The skin is impene-

trable to a musket Ball. Being slow and unwieldy in its motion, nature has provided him with a horn, so strong, solid, and pointed, as to enable him to inflict the most deadly wounds. Many medicinal virtues are also ascribed to this horn, of which cups are frequently made.

His scent is most exquisite. He runs in a direct line, his sight not permitting him to see any thing placed in an oblique direction. Tobacco is his favourite food. The horn was formerly used by princes, as a cup, in order to detect what poison might be presented to them; for when any deadly drug is poured on it, it is asserted that it will immediately break into pieces. There is, also, another power attributed to this horn, which is, that wine, poured into cups made of it, will rise, boil, and ferment.

This animal was known to the Romans in the most early ages, and was among those of the Prænestine pavement. Aristotle, who asserts it to have but one horn, calls it the oxyx, and the Indian ass. Augustus introduced a rhinoceros in an exhibition, which he made on account of his victory over Cleopatra. See Mythology and Roman History.



HIPPOPOTAME *or* SEA HORSE.

THE hippopotame is as large and formidable as the rhinoceros. The male has been found seventeen feet in length, fifteen feet in circumference, and seven feet in height; the legs are three feet long, and the head, nearly four. Hasselquist says, the hide alone is a load for a camel. Its jaws extend about two feet, with four cutting teeth in each, which are twelve inches in length. The teeth of the sea horse are in great estimation amongst miniature painters, on account of their never losing their primitive whiteness; a quality which the tooth of an elephant does not possess.

The skin is so thick as to resist the edge of a sword or sabre. Contrary to all other amphibious animals, its feet are not webbed. In figure it is between the ox and hog; and is found near lakes and rivers, from the Niger to the Cape of Good Hope, in Africa.

This animal pursues its prey with great rapidity in the water, under which it will remain thirty or forty minutes. They do great injury to the African plantation. Dampier says they are so strong, that he has seen one overturn a boat with six men in it; notwithstanding which, they are inoffensive to all except their natural prey. A convincing proof that providence has formed the strongest animals to be the most harmless! They never leave the mouth of the fresh water rivers. The female brings forth her young, which is a single offspring, on land. They are taken in pit falls, and have been often tamed. Their flesh, which is as delicate as veal, is sold like other meat, in the public market.

This animal is the Behemoth of Job. It was known to the Romans, and introduced by Augustus among other foreign animals that graced his triumph over Cloepatra.

It was worshipped by the Egyptians, at the city of Papremis, as a superstitious caution of avoiding any affront to this animal, which they feared might be the case, if they refused him that deification with which they had honoured so many other savage beasts.



ELEPHANT.

THE elephant is reckoned the largest of all land animals, and, next to man, the most sagacious. They grow from seven to fifteen feet in height; and, notwithstanding their unwieldy bulk, they will swim. The trunk with which nature has provided them, and which answers the purpose of hands to feed them.

self is formed of many rings. The eyes are extremely small, the legs very short, and the tail like that of a hog. The feet, though undivided, have five hoofs round their margins. In the upper jaw are two vast tusks, of six or seven feet long, from which we obtain our ivory. In droves nothing is more formidable; wherever they march the forest falls before them. When they are thus united, or enraged, it would require an army to repel them; during their rutting time, they are always seized with a temporary madness. They cannot live far from water.

The elephant is so fond of music, that he may be learnt to beat time, move in measure, and join his voice in concert with the instruments. In Africa it still retains its natural liberty. No animal, when tamed, is more courteous, obedient, and affectionate. It kneels to receive its rider. They will draw carriages and shipping; and frequently carry cannon, and small towers, with soldiers in them, to battle, with great courage and perseverance. They sleep standing.—Many have been known to live from 120 to 130 years. The Africans, who take them in pit falls, very often eat their flesh. A slight wound behind the ear proves fatal to them.

The following is a remarkable instance of its sense, and love of glory: An elephant, being directed to force a large vessel into the water, was found too weak; on which the master sarcastically, desired the keeper to take away the lazy beast, and bring another. The poor animal was so affected at the reflection, that he instantly repeated his efforts, fractured his skull, and expired.

Let not man boast of *his* attachment to glory, since he is thus equalled by the brute creation, in the most eminent examples.



ANIMALS of the MONKEY KIND.

THE ape, or monkey class, is distinguished from all others by their similitude to man. They have hands, instead of paws; their eye lids, lips, and breasts, greatly resemble those of the human race; while their internal structure bears the like conformation. We recommend, therefore, to those who make their persons the principle object of attention, to consider their affinity to this part of the brute creation, to induce them to cultivate those mental qualifications, which can alone distinguish them from the inferior classes of beings!

In the well known story of *Peter the wild Boy*, we see the importance of the cultivation of our infant faculties. This boy was found by George I, in the woods of Germany, and brought to England in the year 1700, when he was supposed to be about ten or twelve years old; at which time his agility in climbing trees, is said to have been surprising. He must have been lost, or left in the woods in his early childhood, perhaps soon after he was able to walk; however it might have happened, his infant impressions of society were lost, and his subsequent sentiments, being dictated by his savage situation, having no opportunity of learning and practising speech, he continued till his death a mere *ourang outang*. He could break or cleave wood, draw water, or thresh in a barn; but his rude, narrow mind could never be enlarged, principally owing to his not being able to acquire the power of speech. This is sufficient to shew what *we* should be, were we left to ourselves, and what we owe to the experience of former ages, for instilling into us a proper education, as our faculties expand to maturity.

The monkey tribe are lively, active, full of chatter, frolic, and grimace. Indeed their actions, as well as their form, seem designed by nature, to burlesque the ignorant part of our species. In general, they are fierce, untamable, dirty, and dishonest.—Their great-

est pleasure is to be perpetually stealing, and hiding their thefts. Woods and trees are their chief habitations, where they feed on fruit, leaves, and insects. Such is their activity, that they will leap from tree to tree, even when loaded with young. Being a sociable animal, they go in companies or tribes, for the different species never mix with each other. Serpents will pursue them to the tops of trees, where they frequently devour them whole.

Although they are not carnivorous, they will, to gratify their propensity to mischief, rob birds nests, both of their eggs and young. In countries where apes abound, the feathered tribe display great sagacity in building their nests as far as possible beyond their reach.

As these creatures differ too much in their species, for a general description to afford an adequate idea of their nature, we shall particularly notice the following.



OURANG OUTANG, OR THE WILD MAN OF THE WOODS.

THIS name is given to various animals that walk upright, but which have different proportions, and come from different countries. The ourang outang greatly resembles in countenance, a toothless old woman, and approaches nearer to the human race than any other animal whatever. This creature, indeed, corresponds so nearly in form to man, that many have expected to find the same correspondence. But the contrary being found, disproves that sceptical assertion, that matter forms the nature of the mind. It proves, likewise, that the most curiously constructed bodies are formed in vain, unless a corresponding soul is infused, to direct and controul its operations.

Dr. Tyson gives the following description of one of these animals brought from Angola, in Africa,

"The body was covered with black hair, which greatly resembles human hair; and it was longest in the same parts, as in the human species. The face was like the human face, except the forehead being larger, and the head rounder. The jaws were not so prominent as in monkeys, but flat, like those of a man. The ears, teeth, and, in a word, the whole of this creature, at first view, presented a human figure. And, as he so nearly approached man in his figure, his disposition was exceedingly fond, more gentle, and harmless, than the monkey race are found in general. Those who were familiar with him in the ship, he would most tenderly embrace, open their bosoms, and clasp his hands about them. And, although there were other monkeys on board, he never associated with them; as if he considered them, as indeed they are, classes of beings much inferior to him in the scale of creation. Being accustomed to clothes, he grew so fond of them as to endeavour to dress and undress himself. Such parts as he could not put on, he took to some of the company on board, to have their assistance. Like any human creature, he would go to bed, place his head on the pillow, and cover himself with the clothes."

One these of animals was shown in London, in 1738, that would reach himself a chair, and drink tea, which if too hot, he would cool it in the saucer; he would, likewise, cry like a child, and be exceedingly unhappy in the absence of his keeper.

It inhabits the interior parts of Africa, the island of Sumatra, Borneo, and Java.

The ourang outang is solitary in its nature, and subsists chiefly on fruits and nuts. The larger sort are so strong, as to be capable of overpowering the strongest man. And, as nature has placed them among the fiercest of animals, they are provided with sufficient courage, cunning, and dexterity, to drive away even elephants from them. They beat them with their fists and pieces of wood, and will even throw stones at those that offend them. They sometimes carry away young negroes, especially the females, whom they have been known to treat with the greatest tenderness. Le Brosse asserts, that he knew a woman of Loango, who had lived three years among them.

PIGMY APE.

THIS animal has a flat face, with ears like those of a man. It is as large as a cat, and has olive brown hair. It subsists chiefly on fruit, ants, and other insects. In order to find ants, they assemble in troops, and turn over every stone in search of them. Africa is the country where they are mostly found. In animal exhibitions, the pigmy ape is not uncommon. Their disposition is very gentle and tractable. The hair on their head seems to come over the forehead like the cowl of a monk. Its hands are remarkably similar to those of human nature. Of all the various species, this, being the most harmless, is most sought after by those who are fond of making such creatures the object of their attention and amusement.

The long armed ape, called, by M. Buffon, the gibbon, is a most extraordinary animal. It walks erect, has no tail, and has such long arms, that when he stands upright, he can touch the ground with his hands.

The tufted ape, has a head so long, that it measures fourteen inches. It has a long upright tuft of hair on the top of the head, and another under the chin.

There are also, the maggot, or Barbary ape; and the *Simia Porcaria*.



BABOON.

THIS animal is about three feet and half high, has a thick body, strong limbs, and long canine teeth. The tail is thick, crooked, and seven inches long. It has a pouch in each cheek, where it deposits its provisions; which shows that it is adapted to live in countries

where it is liable to meet with a temporary scarcity ; nature never bestowing any particularity on a being, but in conformity with the necessity of rendering it capable of living wherever it is placed. Thus arises the great difference in animated nature from the variety of climates, and not, as some have falsely and unphilosophically imagined, to distinguish every part of the creation from each other.

The baboon sometimes walks erect. Instead of nails, the hands and feet are armed with claws, to adapt it for climbing, and render it formidable to those natural enemies it meets with, where it is obliged to seek its subsistence. Forbin relates, that in Siam, when the men are at harvest work, whole troops of them will attack a village, where the women are obliged to defend themselves with clubs, and other weapons, from their brutal insults. Whatever they undertake, they execute with surprising skill and regularity. When they attack an orchard, they do it with all the skill and precaution of an army in a siege. They have their sentinels, and their lines are most orderly formed. The female produces but one, which she carries in her arms.

Baboons are not carnivorous ; they feed upon fruits, corn, and roots. Their internal parts have a greater resemblance to those of quadrupeds than mankind.

The mandril mentioned by Smith, is a native of the Gold Coast. It grows four or five feet high, and more frequently walks erect than on all fours. When displeased, it is said to weep like a child.

The wanderer is a small baboon, remarkable for having a long white head of hair, and a large beard of the same colour.

The little baboon, and the pigtail baboon, are all that remain beside of this species.

Of monkeys, there are an innumerable quantity ; we have only room, therefore, to name them as follows ; dog faced, lion tailed, hare lipped, spotted, green, white eyelid, negro, Chinese, varied dove, tawny, winking, goat, four fingered, weeping, orange, horned, antiqua, fox tailed, great eared, silky, and little lion.

ANIMALS of the DOG KIND.

THE dog, next to the elephant, is the most intelligent and friendly to man, of all quadrupeds. It seems beyond the power of ill usage to alienate his affections from human nature. His beauty, swiftness, vivacity, courage, fidelity, docility, and watchfulness, render him most endearing to man. When in his domestic state, his first ambition, and greatest satisfaction, is to please : He is more humble though affection than servility : He waits his orders, and most implicitly obeys them. Friendly without interest, and grateful for the slightest favours, he sooner forgets injuries than benefits ; his only aim is to serve, never displease.

Numbers of dogs are found wild, or rather without masters, in Cougs, Lower Ethiopia, and towards the Cape of Good Hope. They go in great packs, and attack lions, tigers, and elephants, by all of which they are frequently killed. Although there are wild dogs, now in South America, yet this animal was unknown to the new continent, before it was carried there from Europe. This shews that the brute creation, like the human species, may degenerate from a state of refined society, to that of a savage nature. In their wild state, they breed in holes, like rabbits ; when taken young, they so attach themselves to mankind, as never to desert their masters, or return to their savage companions.

The dog is the only animal whose fidelity is unshaken, and almost the only one that knows his name, and answers to the domestic call. No other animal complains aloud for the absence, or loss of his master, or finds so readily his way home, after he has been taken to a distant place.

Of all animals, the dog is most liable to change in its form ; the different breeds are so numerous, that it is impossible for the most minute observer to describe

them; food, climate, and education, all tend to cause deviations in size, hair, shape, and colour. The same dog becomes a different animal, if taken to a different climate from that in which he was bred. Nothing, therefore, but their internal structure, distinguishes this species from every other. They may be said to be all, originally, from the same stock; but which of the kinds can claim the immediate descent, is not yet determined.

The different species of this animal, in its domestic state, are, the shepherd's dog, hound, spaniel, grey hound, Danish dog, mastiff, bull dog, pup dog, Irish grey hound, terrier, blood hound, leymmer, tumbler, lap dog, small Danish dog, Harlequin dog, cur dog, shark, Turkish, and lion dogs.



MASTIFF.

THIS very useful and inestimable animal we have chosen, as first worthy our particular notice, it being the largest, and of the most essential service to man.

The mastiff possesses great size and strength; has a large head, with hanging lips, and a noble countenance. This creature is so formidable, that, Caius says, the Romans reckoned three of them a match for a bear, and four for a lion. Great Britain was so famous for mastiffs, that the Roman emperors appointed an officer to superintend their breed, and send them, at a proper age, to Rome, for the combats in the Amphitheatre. In England, they are usually kept to guard yards, houses, and other places.

In order to try the strength of this creature, James I, caused three of them to be loosed on a lion, which was vanquished by their strength and courage. Two of the dogs were, indeed, disabled in the combat but the third obliged the lion to seek his safety by flight. From the size, strength, and courage, of this noble

creature, we may presume, that nature especially formed him for the guardianship of mankind; and being the particular growth of this country, we ought to hold ourselves greatly indebted to providence, for so partial and invaluable a bounty which is bestowed upon us for accommodation.



GREY HOUND.

THIS is the swiftest of all dogs, and pursues a hare by the sight, not by smell. Nature, having denied it an acute scent, has recompensed it with extraordinary speed. Such is his staunchness for hunting, that, while he keeps the game in view, he will continue running until he expires, or takes his prey. The head and legs are long, and the body so exceedingly slender, that nothing can be more adapted for fleetness. The grey hound was formerly esteemed among the first rank of dogs; which appears by the forest laws of king Canute, wherein it is enacted, that no person, under the degree of a gentleman, should presume to keep a grey hound.

The various kinds of this animal are, the Spanish grey hound, which is sleek and small; and the oriental grey hound, which is tall and slender, has very pendulous ears, and long hair on the tail.



POINTER.

THIS dog is most excellent in Spain. It is about the size of a bull dog, and spotted like a spaniel. In disposition, it is docile, and capable of being trained

for the greatest assistance to the sportsman who delights in shooting. It is astonishing to see to what a degree of obedience these animals may be brought. Their sight is equally acute with their scent; from which quickness of sight, they are enabled to perceive, at a distance, the smallest sign from their master. When they scent their game, they fix themselves like statues, in the very attitude in which they happen to be at the moment. If one of their fore feet is not on the ground when they scent, it remains suspended, lest, by putting it to the ground, the game might be too soon alarmed with the noise. In this position they remain, until the sportsman comes near enough, and is prepared to take his shot; when he gives the word, and the dog immediately springs the game. Its attitude has often been chosen a picture for the artist to delineate.

Of the other animals of the dog kind, there are, the wolf, fox, jackall, *Isatis*, and *hyæna*.

Of these, we select the *hyæna* and wolf, as the most singular and remarkable.



HYÆNA.

THE *hyæna* is nearly as large as a wolf, which it resembles in the head and body. It is more savage and untameable than any other quadruped, and is continually in a state of rage and rapacity; unless when feeding, it is always growling. Its glistening eyes, erect bristles on the back, and teeth always appearing, render its aspect truly terrific. Its horrible howl, resembles a human voice in distress.

The *hyæna*, from its size, is the most terrible and ferocious of all other quadrupeds. It defends itself against the lion, is a match for the panther, and frequently overcomes the ounce. This obscure and solitary animal chiefly inhabits Asiatic Turkey, Syria,

Persia and Barbary. Caverns of mountains, cliffs of rocks, and subterraneous dens, are its chief lurking places. The mansions of the dead are subject to his violations; for, like the jackall, the putrid contents are, to him, the most dainty food. It preys upon flocks and herds; but when these and other animal prey fails, it will eat the roots of plants, and tender roots of palm trees.

The superstitious Arabs, when they kill a hyæna, always bury its head, lest it should be applied to magical purposes, as the neck was formerly by the Thesalian forcerefs: But the unenlightened Arab must be excused for this weak opinion, when it is considered though the most refined and learned ancients, that the hyæna had the power of charming the shepherds, and as it were, rivetting them to the place where they stood.

Its voice is a hoarse, disagreeable combination, of growling, crying and roaring.

The fabulous relation of Pliny, respecting this creature, is almost too absurd to mention; We, however, relate it, just to shew how much he debased the history of nature with his fanciful impositions: He says, that the hyæna has been known, not only to imitate the human voice, but to call some person by his name, who, coming out was immediately devoured by the subtle cruelty of this creature.

In Guinea, Ethiopia, and the Cape, there is another species of this animal, which is called by Pennant, the spotted hyæna.



WOLF.

THIS animal very much resembles the dog, both externally and internally, having a long head, pointed nose, sharp, erect ears, long bushy tail, long legs, large teeth, and being covered with longish hair. It is of a

pale brown colour, tinged with yellow; though in Canada, it is found both black and white. The principal feature which distinguishes its visage from that of the dog is, that its eyes, which are fierce and fiery, slant upwards, in direction with the nose.

Though so near in resemblance to the dog, his nature is entirely different, possessing all his ill qualities, without preserving any of the good ones. These animals entertain such a natural hatred to each other, that they never meet without fighting or retreating. If the wolf proves victorious, he devours his prey; but the dog, more generous, is content with victory.

They are naturally cruel and cowardly; and will fly the presence of man, unless pressed by hunger, when they prowl by night, in vast droves, destroying any persons they meet; and such is their predilection for human flesh, that, when they have once tasted it, they ever after attack the shepherd in preference to his flock.

The wolf, of all beasts, has the most rapacious appetite for animal flesh, which nature has furnished it with various methods of gratifying; notwithstanding which, it most generally dies of hunger; which is easily accounted for, when we consider its long proscription, together with the reward formerly offered for its head, which obliged it to fly from human habitation, and seek refuge in woods and forests.

Wolves were so numerous in Yorkshire, in the reign of Athelstan, that it was found necessary to build a retreat at Flixton, to defend passengers from their ferocity. In France, Spain and Italy, they are still greatly infested with this animal. They are also to be found in Asia, Africa and America; but not so high as the Arctic Circle.

The female goes about fourteen weeks with young, and brings from five to nine at a litter.

E

ANIMALS of the CAT KIND.

THIS class is particularly distinguished by their sharp claws, which they can extend or conceal, at pleasure. They lead a solitary, ravenous life ; for most of them, not only seek their food alone, but, excepting certain seasons, are enemies to each other. The dog, wolf and bear, will sometimes live on vegetables ; but the lion, tiger, leopard, and all the cat kind, feed only upon flesh.

These animals are, in general, fierce, cruel, subtle and rapacious : It is probable, however, that the most ferocious may be rendered domestic. Lions have drawn the chariots of conquerors, and tigers have tended those herds, which they now destroy. All animals of the cat kind, though they differ in size and colour, are allied to each other, in artifice, ferocity and rapacity.—To see one, is to know them all. Human assiduity can effect many changes in other creatures ; but, in this kind, all attempts to alter their immutable nature, prove abortive. The dog, cow and sheep, vary according to their country, but the lion and tiger are the same, in whatever clime they are found.

This class of animals is remarkable for having round heads, short noses, and long whiskers on the upper lip ; they have also thirty very formidable teeth, which are not, however, so well adapted for chewing their food, as for tearing their prey ; this shows, that nature has formed every creature according to the means they are obliged to adopt to obtain their subsistence. These creatures, being carnivorous, have teeth particularly adapted to the purpose ; their claws are likewise sharp and strong in the grip, so as to enable them to hold their prey beyond every possibility of escape. Not being capable of running fast, they are formed with a quickness of scent to discern their prey, and feet so soft, that when they walk, they may cause no sound which might, prematurely, alarm the animal they are going to surprise.

Although possessed of all these fierce, and powerful qualities, they are naturally too timid to attack any animal possessed of more strength and courage than themselves. When they meet with an animal of equal force, they always retreat, and decline coming to a contest.

LION.

WHAT distinguishes this animal's appearance from others, is chiefly his head, neck, chin and shoulders, being covered with long, shaggy hair, like a mane. It has very strong limbs, and a long tail, with a tuft of hair at the end. The colour is tawny, except on the belly where it inclines to white. The length of the largest lion, from the nose to the tail, is about eight feet. The lioness is less, and has no mane.

Climate little affects this noble animal. He subsists as well under the frigid pole, as beneath the torrid zone; while most other animals are adapted to live only in particular latitudes.

The lion abounds chiefly in the torrid zone, where they are the largest, and most tremendous. The burning sun, and arid soil, seem to inflame their nature to the greatest height of savage ferocity. In the colder regions, such as Mount Atlas, they are much inferior, both in size, strength and spirit. The torrid zone, affording but few rivers or fountains, causes him to live in a perpetual fever, which excites a sort of madness, fatal to every animal he meets. It is happy, therefore, that this ferocious creature, as travellers in general relate, are daily declining in number. But, perhaps, were they to be entirely extirpated, other animals, on which they prey, might grow too numerous for the safety and welfare of the inhabitants of those dreadful

countries. We had, therefore, better leave the proportioning the number of this animal to HIM, who measures all things by the scale of his unerring wisdom and providence.

The eyes of a lion are always bright and fiery, even in death. The paws, teeth and tongue, perfectly resemble those of a cat; and, in their internal parts, there is scarcely any difference.

His anger being noble, his courage magnanimous, his disposition grateful, and his conquests universal over all other animals, he is justly called, **THE KING OF BEASTS.**

When hungry, he will attack any thing that comes in his way. His teeth are so strong, that he breaks the bones of the strongest animals, which he swallows with the flesh. He requires about fifteen pounds of flesh per day, and seldom touches any putrid body.



PANTHER.

THIS beast has been frequently mistaken for the tiger; which error arose from its being nearly of the same size, possessing the same disposition to cruelty, and a general enmity to the animal creation. Its chief difference is in being spotted, and not streaked as the tiger.

The panther is found in Barbary, and all the intermediate countries in Africa, that lie between that and Guinea; and is peculiar to Africa, as the tiger is to Asia. Although hunger impels it to attack every thing that has life, without distinction, yet it differs from the tiger, in preferring, at other times, the flesh of animals to that of mankind.—Like the tiger, it seizes its prey by surprise, and will climb trees in pursuit of monkeys, and other creatures which seek an asylum there. It

always retains its fierce, malevolent aspect, and never ceases to growl or murmur.

This animal was well known to the ancients, which may be seen by the number continually introduced by the Romans in their public shows. Scarus exhibited one hundred and fifty panthers in one show ; Pompey the great, four hundred and ten ; and Augustus, four hundred and twenty. Notwithstanding which, they are now swarming in the southern parts of Guinea.

Of the remaining animals of this kind, we shall select the white bear and opossum.



WHITE, OR OLAR BEAR.

THIS creature grows to a great size, and is the undisputed master of Greenland and Spitzbergen. When our mariners land on those regions of ice, these animals come down to view them uncertain whether to attack or retreat. When shot at, or wounded, they endeavour to fly ; but, if they find themselves incapable, their resistance never ends but with their death. They live upon seals, carcases of whales, and such human bodies as they can find, or make their prey. Companies of them are so daring, as to attack crews of armed men, and will even board small vessels. From their disposition to resist all invasion, they seem formed by nature to convince us, that this inhospitable clime was meant only for their possession, and that it was never designed by Providence for the abode of the human species. They swim well and dive with great agility.—Battles frequently ensue between them and the whales ; in which the latter, from being attacked in their own element, are generally victorious. If, however, they can capture a young whale, they are sufficiently repaid for the danger of meeting the parent.

The affection between the female and their young, is such, that they prefer death to parting. The coldest part of the globe is allotted by nature for the abode of this creature, as they are not to be found further south than Newfoundland, unless they have been carried involuntarily by floating islands of ice, on which they had too rashly ventured in search of their prey.

The flesh of this animal is white, and has the taste of mutton. The fat is melted for train oil ; and that which is extracted from the feet, is used medicinally. The liver is so very unwholesome, that it endangered the lives of three sailors who eat some of it when boiled.

Dr. Goldsmith relates, that when a Greenlander and his wife are paddling out at sea, a white bear will frequently jump into the boat, and be rowed to shore like any other passenger.



OPOSSUM.

WHAT distinguishes this from all other animals, and has long excited the wonder of mankind, is a large pouch in the lower part of the belly of the female, in which the teats are lodged, and where the young are sheltered as soon as they are brought forth ; at which time they are blind, naked, small and imperfect. Nature, therefore, has, very providentially, provided them with this maternal asylum, until they can perfect their being. But when they are grown stronger, they seek shelter here, as chickens under the wing of the hen ; here they repose from fatigue, or seek their food when hungry. On these occasions, the dam most readily opens her bag to receive them. The flesh of the old opossum is like that of a sucking pig ; the Indian women dye its hair and weave it into girdles. The skin has a very offensive smell : The head, which is like that of the fox,

has fifty teeth ; the eyes are black, lively, and placed upright ; the ears large, broad and transparent ; the tail is partly covered with scales, and partly with hair, which is supposed to be that part of the young which cannot be concealed in the pouch, and which nature, therefore, has provided with this armour. The feet resemble hands, having five toes or fingers, with white crooked nails.

The tail of this animal greatly resembles a snake ; by which it will suspend itself on one tree, and, by swinging its body, throw itself among the branches of another. It destroys poultry, sucking the blood without devouring the flesh ; walks extremely slow, and, when overtaken, will feign itself dead.

It is a native of Virginia, Louisiana, Mexico, Brazil and Peru.

The other, less interesting, animals of the cat kind, are, the domestic cat, wild cat, ounce, tiger cat, lynx, cougar, siaguish, Angora cat, ferval, black bear, brown bear, wolverine or glutton, raccoon, badger, marmouse, cayopolin, phalanga and tarfier.



INDIAN MUSK,

IS a native of Ceylon, of an olive colour, and in length about seventeen inches. Its throat, breast and belly, are white, the sides and haunches spotted, and barred transversely with white. It has large open ears, and a very short tail.

ANIMALS of the WEASEL KIND.

THIS species is distinguishable from other carnivorous animals, by their long and slender bodies, which enable them to creep into very small apertures after their prey. They are called vermin, from resembling the worm in this particular. The form and disposition of the claws differ from those of the cat kind, as they cannot either extend or contract them. They vary from the dog kind, in being clothed with fur rather than hair; and differ both in disposition and appearance. They are cruel, cowardly and voracious; subsist mostly by theft; and destroy all about them before they begin to feed. They suck the blood of every animal before they eat the flesh.

Of the various individuals of this species, we shall select the most remarkable, beginning with the Civet,

CIVET.

THE civet, like the rest of the weasel kind, has a long slender body, short legs, and an odorous matter exuding from the glands behind. It is much larger than weasels in general; being in length, from nose to tail, two feet three inches, the tail fourteen inches, and the body rather thick. It is mostly of an ash colour, spotted with black; has a long nose, with whiskers; and eyes that are black and beautiful.

This animal is a native of India, the Philippine Isles,

Guinea, Ethiopia, and Madagascar. The famous drug, called *Musk*, is produced from them. To procure which, those who keep them provide a box for their habitation, and collect the musk, by scraping it three times a week. The male, if irritated, will yield most. When young, they are fed with millet pap, and a little fish or flesh; but, when old, with raw flesh principally. In their wild state they prey on fowls.

Although a native of warm climates, it will live in temperate, and even in cold regions, if carefully defended from the weather.—Great numbers are bred in Holland, where they afford considerable emolument to their owners. The musk of Amsterdam, being less adulterated than any other, is most esteemed.



BEAVER.

THE beaver is the only quadruped that has a flat broad tail, covered with scales, which serves it as a rudder in the water, and also as a cart to carry materials for its building on land. The hind feet are webbed, but the fore feet are not, from the necessity of using them as hands. The fore part, in general, resembles a quadruped, and the hind part a fish. The teeth are formed like a saw, with which they cut the wood they use in building their huts, and damming the water out of them. The fur, which is of a deep chestnut brown, is the most valuable material used in the hat manufactory. Its length, from nose to tail, is about three feet; the tail is eleven inches long and three broad.

In June and July they form their societies, of two and three hundred; which they continue all the rest of the year. Wherever they meet, they fix their abode, which is always by the side of a lake or river. The sagacity of this animal is truly worthy the con-

sideration of the naturalist and philosopher, which it is impossible to consider, without the greatest humiliation to human pride. When we see a beaver, with only its feet, teeth and tail, capable of building a hut, as commodious for itself and young, as a cottage can be rendered to a peasant, even with the aid of reason and mechanical tools, what is the boasted superiority of man !

If they fix their station by a river subject to floods, they build a dam or pier, which crosses the stream, so as to form a piece of water ; but, if they settle near a lake, not liable to inundation, they save themselves this trouble. To form this dam or pier, they drive stakes of about five or six feet in length, wattling each row with twigs, and filling the interstices with clay. That side next the water is sloped, and the other perpendicular. The bottom is from ten to twelve feet thick, gradually diminishing to the top, which is but two or three feet at most. This dam is generally from eighty to an hundred feet in length. The greatness of the work, compared with the smallness of the architect, however astonishing, is not more wonderful than its firmness and solidity.

The houses are erected near the shore, in the water collected by the dams. They are either round or oval, and are built on piles. The tops being vaulted, the inside resembles an oven, and the outside a dome. The walls, which are two feet thick, are made of earth, stones and sticks, and plastered with all the skill and excellence of the most expert mason. Every house has two openings, one into the water, and the other towards the land.—Their height is about eight feet. From two to thirty beavers inhabit each dwelling ; and, in each pond, there are from ten to twenty five houses. They have each a bed of moss ; and are such perfect epicures, that they daily regale on the choicest plants and fruits which the country affords.

This animal affords that celebrated resinous substance, called *Castoreum*, which is mixed most successfully in several hysteric and cephalic medicines. An oil is likewise extracted from it, called *Oil of Castor*, which, while it remains in its liquid, unctuous state, is used for the cure of several disorders.

PORCUPINE.

THIS animal is about two feet long, and fifteen inches in height. The body is covered with quills, from ten to fourteen inches long, and very sharp at the points, growing as feathers in birds. The head, belly and legs are covered with strong bristles. Its whiskers are long, and the ears like those of a man. When irritated, its quills stand erect. The eyes are remarkably small, being only about a quarter of an inch wide.

Like the hedgehog, these quills are rather for self defence than the purpose of attacking an enemy. The idea formerly entertained, that it darted its quills, is found to be erroneous; they only shed them when they moult; which, in some measure, shews their alliance to the bird creation, though not destined for flight, having neither wings nor feathers. The quills, being found a sufficient defence against the most formidable animals, show how powerful the weakest animals may be rendered, when under the skill and workmanship of infinite wisdom.

A wolf, it is said, was once found dead, with some of the quills of the porcupine sticking in his mouth; no doubt but they must have stuck there, when hunger induced him to the rash attempt of devouring this self defended animal.

The porcupine is generally described to be an inoffensive animal, living entirely on fruits, roots and vegetables; but some naturalists, particularly Dr. Goldsmith, assert, that they prey upon serpents, with which they live in perpetual enmity. Their method of attacking them is said to be, that the porcupine rolls himself on them, wounding them with its quills, until they expire, when they are immediately devoured by the victor.

It is an inhabitant of India, Persia, Palestine and every part of Africa. Although not originally a native of Europe, it is found wild in Italy; in which

place they have smaller crests, and shorter quills, than those of Asia and Africa.

In Rome it is sold for food in the public markets.



SLOTH.

THERE are two kinds of this animal; one of which has two claws on each foot, and is without a tail; the other, three claws on each foot, with a tail; and are both described under the common appellation of the sloth. It is about the size of a badger, and has a coarse fur, resembling dried grass; the tail is exceedingly short; and the mouth extends from ear to ear. The feet of this animal are so obliquely placed, that the soles scarcely ever touch the ground. The construction of its limbs is so singular, that it can move only at the rate of about three yards in an hour. Thus, unless impelled by hunger, it is seldom induced to change its place.

The sloth inhabits many parts of the eastern side of South America. It is the meanest, and most ill formed of animals. Leaves, and fruits of trees, are its chief food. It is a ruminating animal, for which purpose nature has provided it with four stomachs.

Although it ascends a tree with great difficulty, yet it cannot descend without forming itself into a ball, and dropping from the branches to the ground, where the shock causes it to remain for a considerable time in a perfect state of inactivity. To travel from one tree to another, at the distance of one hundred yards, is, for this animal, a week's journey.

Every effort which the sloth makes to move, appears so painful and difficult, as to cause it to utter the most pitiful cry; which is likewise wisely given it for its protection; for, being defenceless, as well as incapable of flight, it could never escape destruc-

tion, was it not that their cry is so hideous, and lamentable in its tone, as to cause every beast to avoid the sound. How ought we to admire the wisdom and providence of the Almighty, who, by the breath only of this defenceless animal, has raised a bulwark for its protection !

We should do injustice to the great Creator of the Universe, who never created any thing in vain, could we suppose any animal was ever so formed, as to be incapable of comfort ; although the sloth carries every appearance of misery in its nature, there cannot be a doubt but it has satisfactions peculiarly suited to its station.



ARMADILLO.

NATURE seems to have reserved all the wonders of her power for those remote countries, where man is most savage, and quadrupeds the most various. She seems to become more wonderful, in proportion, the further she retires from human inspection. But this, in reality, only arises from the attempts of man to rid the country of such strange productions, in proportion as he becomes more civilized.

The armadillo, which is covered with shells, at the first view, appears a round misshapen mass, with a long head and short tail. Its size is from one to three feet in length. These shells, which resemble a bony substance, cover the head, neck, sides, rump and tail. This natural defensive covering, being jointed, the creature has the power of moving beneath its armour, which resembles a coat of mail.

As these shells are only sufficient to defend the armadillo from a feeble enemy, and not equal to the resistance of a powerful antagonist, nature has furnished it with a method of enclosing its body within the cov-

ert of this armour. Thus, like the hedgehog and porcupine, it is secured from danger, without having recourse to flight or resistance, and becomes invulnerable while in the midst of danger.



HARE.

THIS timid and defenceless animal is another instance of the bountiful care of providence towards mankind. The hare not only supplies us with a delicacy for our table, and a covering for our heads (the fur being manufactured into hats) but also affords us one of the most wholesome of our rural diversions.

It is an inhabitant of most parts of Europe, Asia, Egypt, Barbary, Japan, Ceylon and North America; but those of Barbary, Spain and Italy, are much smaller than ours. In Wales and France they are generally larger, though not of so fine a flavour.

This solitary animal has, independent of man, a host of enemies, both in the animal and feathered tribes. The fox, polecat, stoat and weasel, hunt them with such unremitting perseverance, that, notwithstanding their swiftness it is with great difficulty they escape their rapacious pursuit. The weasel will frequently fasten upon the neck of a hare, while on her form, and hold there till it is quite dead, sucking its blood while running. The kite, hawk, owl and many other birds of prey, are very destructive to young leverets. This persecuted animal, however, like the rabbit, is so prolific, as to afford a plentiful supply to those who protect it against the unlawful and destructive snares of the poacher.

The female goes thirty days with young, and brings forth from two to four at a time, with their eyes open; she breeds six or seven times a year, and

suckles her young for twenty days, when her maternal cares cease. After this time they feed on grass, roots, leaves, corn, plants and the bark of young trees, to which they are often very destructive in nurseries and plantations. They breed when but a few months old.

Though the hare is reckoned the most timorous of all animals in its wild state, it will, if taken when young, become so tame and familiar as to sleep with the grey hound, terrier, or pointer; of which the writer of this article has been eye and witness. This solitary animal, although not possessed of the wily subtilty of the fox, discovers a most wonderful instinct, which has been given it for its preservation. The various stratagems and doubles it makes, when hunted, to avoid death, would excite the surprise of every beholder; nor does it display less sagacity and cunning, in preventing the poacher from tracing it through the snow, by taking the most extraordinary leaps, to elude danger, before she takes her form.



RABBIT AND THE MOLE.

THE great similarity between the rabbit and the hare, leaves but little to be said by the natural historian, or the moralist, in its description. Their figure, food, and natural properties, are nearly the same. The hare seeks its safety by flight, while the rabbit runs to its subterraneous burrow, which nature has taught her to make with an ingenuity, not to be excelled by the most experienced miner. The fruitfulness of the rabbit so far exceeds that of the hare, that according to Pliny and Strabo, they were so great a nuisance in the Balearic Islands, in the reign of Augustus, they were under the necessity of imploring the assistance of

a military force from the Romans to extirpate them. A Spanish historian also says, that, on the discovery of a small island, which they named Puerto Santo, or Holy Haven, where they were saved from shipwreck, they put a pair of rabbits on shore, which increased so much in the course of a few years, that they drove away the inhabitants, by destroying their corn and plants, who left them to enjoy the island without opposition.



MOLE.

AS if nature had meant that no part of the earth should be untenanted, so the mole is formed in such a manner, as to live entirely under ground. The size of this animal is between that of the rat and the mouse, but without any resemblance of either, being quite different from any other of the four footed race. It has a nose like a hog, but longer in proportion; instead of ears, it has only two holes; and its eyes are so remarkably small, that it is with the greatest difficulty they are discovered.

The moderns, as well as the ancients, were universally of opinion that the mole was totally blind; but Dr. Derham, by the means of a microscope, discovered all the parts of the eye known in other animals.

A very small degree of vision being sufficient for a creature destined to a subterraneous abode, providence has wisely formed them in this manner: For, had they been larger, they would have been continually liable to injury, by the earth falling into them; to prevent which inconvenience, they are likewise covered with fur. Another wonderful contrivance, to be observed in nature's works, is, that this animal is

furnished with a certain muscle, by which it can exert, or draw back the eye, as necessity requires.

As a recompense for this defect in the optic nerves, the mole enjoys two other senses in the highest perfection; viz. hearing and smelling; the first of which gives it the most early notice of danger while the latter, although in the midst of darkness, directs it to its food. The wants of a subterraneous animal being but few, so those of the mole are easily supplied; worms and insects, inhabiting their regions, being their only food.

Although the mole is generally black, yet it is sometimes spotted, and has also been found quite white. The fur is short and close set, and smother than the finest velvet. The length, including the tail, which is about an inch, is seven inches. It breeds in the spring, and generally brings forth four or five at a time.



JERBOA.

THIS singular, and, we may say, pretty little animal, is a native of Egypt, Barbary, Palestine and the deserts between Baffora and Aleppo. It is about the size of a large rat; has dark and full eyes, long whiskers, broad erect ears, and a head like a rabbit. The tail is about ten inches long, at the end of which is a tuft of black hair, tipped with white. The breast and belly are of a whitish colour; but all the other part of the body is ash colour at the bottom, and tawny at the ends. The fore legs are not above an inch in length, with five toes on each, which are all furnished with sharp claws; but the hind legs which are two inches and a quarter in length, and covered with short hair, exactly resemble those of a bird, having but three toes, the middle of which is the longest; they are also armed with sharp claws.

This little animal is as singular in its motion as in its form; always walking or standing on its hind legs, and using the forepaws as hands, like the squirrel. It will jump six or seven feet from the ground, when pursued, and run so remarkable swift, that few quadrupeds can overtake it. It is a very inoffensive creature, living entirely on vegetables. It burrows in the ground, like rabbits.

In the year 1779, two of them, which were exhibited in London, had nearly burrowed through the wall of the room in which they were kept.

There is an animal of this species in Siberia, which is a more expert digger than the rabbit itself; their burrows are so numerous in some places, as to be even dangerous to travellers.

It is related of this latter, that they will cut grass, and leave it in little heaps to dry; which not only serves them for food, but also makes their habitation warm and comfortable for themselves and their young during the winter season.

There is also the torrid jerboa, so called by Linnaeus from its inhabiting the Torrid Zone, which is about the size of a common mouse; and the Indian jerboa; a specimen of which was to be seen in the cabinet of the celebrated Dr. Hunter.



NATURAL HISTORY.

PART II.

BIRDS.

THEIR GENERAL NATURE.

WHILE the forests, the waters, and even the depths of the earth, have their respective inhabitants, the air, which includes an immense space, too elevated for the power of man to explore, is traversed by innumerable beings of variegated beauty, called birds ; which, in order to facilitate their flight through those expansive regions, with a swiftness to compensate their want of strength, are formed on the following general principles.

FORM.....The body of a bird, is made sharp in front, and, when on flight through its native element, it swells gradually, until the tail is fully expanded, which, with the aid of the wings, serves it not only as a buoy, but also as a rudder to direct its flight.

PLUMAGE.....They are covered with feathers, most admirably adapted to the air they inhabit, being composed of a quill, containing a considerable quantity of air, and a shaft, edged on each side with a most volatile substance, which, with the concavity of the wings, renders the body considerably lighter than the

air; and thus enables them to explore an immense space, denied to every other part of the creation.

SIGHT.....To adapt the sight to the swiftness of their motions, their eyes are not so convex or prominent as in creatures confined to the earth; which not only prevents their being injured by the repulsive force of the air, in their rapid flights, but likewise renders them less liable to be touched with the points of thorns, sprays, &c. in their progress among trees, bushes, and hedges.—The film, or nictating membrane, with which they occasionally cover their eyes, without closing the lids, clears and protects them from the glare of sun beams, as well as from the mists, fogs, and clouds, with which the air occasionally abounds, when forced to range for food or nesting. The power also of extending the optic nerve, gives such an acuteness to their sight, that they can perceive objects more distinctly, and at a greater distance, than any other creature.

HEARING.....They have the power of distinguishing sounds, without any external ear, which would not only impede their flight, but render them liable to many injuries in darting through bushes, briars, &c.

SMELLING.....Their scent is so very acute and extensive, by which they are apprised of the approach of their natural, as well as artificial enemies, that those who decoy ducks, are obliged to keep a piece of burning turf in their mouths, to prevent being discovered.

INTERNAL STRUCTURE.....The bones, which are formed sufficiently strong to support the weight of the body, and the system of its functions, are so light, as to be scarcely any additional burthen to the flesh. All their internal structure is calculated to increase the surface beyond the proportion of the solidity of their bodies, in order to render them lighter than the same portion of air. The lungs and ends of the windpipe branches imbibe air into a number of bladder receptacles. The crop, which is the repository for superfluous food, supplies them in long flights, and other

times of indispensable necessity. Their food, being generally dry, hard, and crude, they have a gizzard, which with the help of sand, and other stony particles they swallow, aids them in digestion.

MOULTING.....Although birds, from the simplicity of their structure, habitation of the air, and perpetual exercise, are less subject to disease than other creatures, yet they are liable to one to which no others are exposed; this is the sickness attending the annual renovation of their plumage, which is called their moulting time.

GENERATION....In the spring, when nature affords abundance of food, birds are stimulated to pair, to increase their species. Having chosen their mate for the ensuing year, they proceed to those official cares which distinguish the approach of being made parents. With all the fondness of such expectations, they proceed to collect materials for their nests, which they build with the skill of the most expert architect. They discover so much constancy to each other, with such unabating care and affection in breeding and rearing their young, that they might be taken as examples by the human species.

HABITATION.....Birds are particularly attached to the place of their nativity. A rook, if undisturbed, will never quit its native grove; the blackbird and redbreast are tenacious of their birthrights; and many others, that are known to emigrate annually from this country, have been found, by frequent experiments, to return to their usual breeding places.

MIGRATION.....Is that passage of birds from one climate to another, according as they are impelled by fear, hunger, or change of seasons. Many have been the conjectures of naturalists and travellers respecting this extraordinary conduct in particular birds.—Some have supposed that those which were not strong enough to sustain a flight over expanding oceans, collected themselves in bodies, and repaired to chasms in rocks, or sought a temporary tomb beneath the waters, where they remained, in a state of torpidity, until the

revolving seasons should recall them to the exercise of their former functions. Others have imagined, that they actually seek light climes more congenial to their nature and substance, at a time when cold and scarcity rendered the country of their sojournment both dangerous and inconvenient. The times of their departure and return are so regular, that, in the course of five years, the average has not exceeded more than a single day. Those tribes which have not sufficient strength to cross the immense deserts and vast oceans, such as swallows, martins, &c. are supposed to find a winter subsistence in the southern countries of Europe, where the clemency of the season seems, most hospitably, to invite them to partake of their bounties.

It has been observed, that some birds which migrate in particular climates, are constantly resident in others. According to Herodotus there is a species of swallow, that abides perpetually in Egypt; which must undoubtedly arise from the equality of the seasons in that part of Africa. This property, therefore, is not peculiar to any particular species of bird, but rather caused by the difference of the country and climate in which they are bred. In Cayan, Java, and other warm climates, those birds, which uniformly migrate in the cold regions of Norway, North America, and Kamtschatka, are constant residents through every change of season. The manner of their departure is too curious to pass unnoticed. They range themselves in a column, like an I, or in two lines, resembling the sides of a wedge. When they have taken flight, one particular bird takes the lead; after going a certain distance he is relieved by another. In their progress, several particulars occur, to excite our wonder, as well as our veneration, at that immensity of wisdom, which has formed them with so extraordinary an instinct. Who acquainted their young with the time, place, and necessity of their departure; and what can induce them to change the place of their nativity for a strange country? Who causes the imprisoned bird to feel its captivity at the time of emigration; or who is the herald, to assemble these feathered voyagers and travellers? Who is it that forbids one to depart before the appointed time? Who forms their charts; or who supplies them with a compass, to direct them

over pathless wastes and trackless oceans? Or who is it that guides them to those countries, where they rest and recruit themselves after their long journies, so as to be enabled to reach their destined sojournment? As these questions can only be referred to the wisdom of the great Creator of the universe, we cannot avoid learning from them this lesson of humility at least; that, whatever may be the boast of human reason, it vanishes, when compared with this wonderful instinct of the emigrative power in birds.

CLASSES.....According to Linnæus, birds are divided into six classes, in the following order:

I. THE RAPACIOUS KIND.....Which are carnivorous, and live by preying on others, or eating the flesh of dead animals. They are distinguished by the beak, which is strong, hooked and notched at the point; by their short muscular legs, strong toes, and crooked talons; by their strength of body, impurity of flesh, nature of food, and ferocious cruelty.

II. THE PIE KIND.....Which are distinguished by their miscellaneous food, and their females being fed by the males in breeding time.

III. THE POULTRY KIND.....Which are distinguished by their fat muscular bodies, and pure white flesh. Strangers to any attachment, unlike other birds, they are promiscuous in the choice of their mates.

IV. THE SPARROW KIND.....Which mostly compose the vocal and beautiful. Some live on seed, others on insects. While rearing, they are remarkable fond and faithful.

V. THE DUCK KIND.....Are distinguished by their bills, which serve them as strainers for their food; and by their feet, which, being webbed, enable them to swim in the waters, where they chiefly reside.

VI. THE CRANE KIND.....Are distinguished by their long and penetrating bills, which enable them to search for food at the bottom of waters, near which

they chiefly reside; and by their necks and legs, which are proportionable in length.

Having thus briefly given an account of the different classes, with their distinguishing peculiarities, we shall begin our description with those which cannot be ranged systematically; such as the ostrich, cassowary, condour, dodo, &c. which, being of extraordinary size, and incapable of flying, are not included in the six classes before mentioned.



OSTRICH.

THIS bird, according to naturalists, is one of the largest in the world. The head, which is like that of a duck, rises to the height of a man on horseback. The body is like a camel, and has two short wings, which, though exceeding strong, are not expansive enough to buoy it from the surface of the earth; but, with their assistance, added to the length of its legs, it exceeds in speed the swiftest Arabian. It has legs and thighs like a heron, and each foot has three claws covered with horn, the elastic strength of which greatly facilitate and increase its flight.

Its eggs are so large, that they commonly weigh fifteen pounds. That they disregard their future progeny, Kolben denies, having seen them set on their eggs at the Cape of Good Hope. She, however, deserts them by day; but, like other birds, returns to them at night. The climate at the Cape requiring her brooding heat, it is a natural instinct; but, in those parts of Africa, nearer the equator, we conceive they do, as reported, leave their eggs to be hatched by the sun, but not without the precaution of covering them with sand, and bringing worms and other provisions for the young, when hatched; for, in birds, as in other creatures, nature conforms to the soil and climate which they are to inhabit. The simplicity and ignorance of the ostrich is particularly observable, in its only hiding its head to secure its body from the attack of the hunters.

The amazing power possessed by this bird, of digesting stones, iron, and other crude substances, evinces the wisdom of the Creator, in giving it the faculty of turning to nutriment those things which its barren and native deserts only afford.

The ostrich seems to fill one of those voids in nature, between the quadruped and feathered race, as the bat does another; the former resembling the camel, in the same proportion as the bat does the mouse.

To the beauty of its plumage this bird owes its destruction. But, in return, it triumphs over man; for the feathers which its death affords the pursuers, attend the hearse of man to the grave.



CASSOWARY.

THIS bird, which is found in the southern parts of the East Indies, is about five feet and a half high. The wings are so small, as to be scarcely perceptible. It has a crest on its head, resembling a helmet, three inches high. Though every feather of this bird is adapted for flight, none are entirely destined for covering. The extremities of them are armed with five sharp prickles, the longest of which is eleven inches. It is described to have the head of a warrior, the eye of a lion, defence of a porcupine, and fleetness of a courser. But though provided thus formidably, it is perfectly inoffensive. It neither walks, runs, hops, jumps, or flies; but kicking up one leg behind, it bounds forward with the other, with a velocity not to be equalled by the swiftest Arabian.

This bird, like the ostrich, extremely voracious of all things capable of passing its swallow. The Dutch assert, that it not only devours glass, iron, and stones, but even burning coals, without the least fear or injury. From its scarcity, it is generally supposed not to be so prolific as the ostrich; but this may be more owing to their native place being usurped by man, than from any defect in its nature; for, both its natural armour and digestive power, are convincing proofs that it is destined for the desert, and not for cultivated plains. So that, like other wild creatures, when they have, in vain, disputed with man the possession of their own territories they may have withdrawn themselves to some solitary desert, far from the prying eye of man, and for which they are so peculiarly formed.

EMU.

WHICH is a bird but little known, is six feet high, resembling the ostrich in form; and has been reckoned, by travellers and naturalists, to be of the same species. It is the largest bird yet discovered on the new continent: But it is chiefly found in Guiana, Brazil, Chili, and the immense forests bordering on the mouth of the river Plata. Some assert, that it buries its eggs in the sand, like the ostrich; but they may be mistaken, as those of the crocodile are buried and hatched in the same manner.



DODO.

THE inactive appearance of this bird, seems to fill another void in nature between birds and beasts, which is that between the sloth and a more active individual of the feathered tribe. Its body, which is nearly round, is very ponderous, and covered with grey feathers. The legs resemble the pillars of a fixed building, but seem scarcely strong enough to support the body; the neck is thick and puffy; and the head has two wide chaps, that open beyond the eyes, which are large, black, and prominent; the bill, which is extremely long and thick, is of a blueish white, and crooked in opposite directions, resembling two pointed spoons laid on the back of each other. It has a stupid and voracious appearance, which is greatly increased by a bordering of feathers, that grow round the root of the beak, and have the appearance of a cowl or hood. — The dodo is, in short, a most complete picture of stupidity and deformity. /

Like the sloth, it is incapable either of defence or flight. It is a native of the isle of France, where it was first found by the Dutch. It is asserted by some, that the flesh is nauseous, while others, on the contrary, contend that it is palatable and wholesome. This bird grows to such an enormous size, that three or four of them are sufficient to dine a hundred sailors. The dodo, by some, is thought to be the bird of Nazareth, the description of it being exactly similar to that bird.

This seems to be an entire exception to the general nature of birds, both in appearance, as well as activity. If we except the owls, and birds of that description, there are scarcely any but what are agreeable in form, and alert in motion; but this, on the other hand, appears formed, not only to disgust the spectator, but to be almost an immoveable burlesque of the feathered tribe. Were we allowed to give our opinion of the final cause of creating so unseemly a creature, we should say, it was formed as a foil to the various beauties discovered in the rest of the bird creation.



GOLDEN EAGLE.

THIS bird is about three feet nine inches in length, and eight spans in breadth. Its bill is strong, sharp and crooked: The eye has four lids, to guard it against excessive light, and prevent it from external injuries: The toes are covered with scales; and the claws are exceedingly strong and formidable. It is found in the mountainous parts of Ireland, where its fierceness has been observed to attack cats, dogs, sheep, &c. As it seldom lays more than two eggs, it is a convincing proof that providence has wisely prevented too great an increase of what might prove of-

sensitive, if not destructive to the possessions of mankind. Some of these birds have been found in Wales.

The male engages in the maintenance of the young for the first three months; after which time the female undertakes, and continues in this employment, until they are capable of providing for themselves. The eagle flies the highest of all birds, and is therefore called the bird of Heaven. Bochart says, that it lives a century, during which period it is continually increasing. Such is its thirst after blood, that it never drinks any other liquid, unless when sick. The swan is the only bird that dare resist this king of birds. All others, not even excepting the dragon, tremble at its terrific cry. Not content with preying on birds, and the smaller beasts, it will plunge into seas, lakes, and rivers, after fish. His sight is more acute than that of any other bird. It carries the young on its back to secure them from the fowler. The feathers are renovated every ten years, which greatly increases its vigour, as expressed in the beautiful simile of David: *Thy youth shall be renewed like that of the eagle.* The eagle that would not quit the corpse of Pyrrhus, who had brought it up from a nestling, is a proof that this species of bird is capable of attachment and gratitude.

There are sixteen other sorts of eagles; namely, the sun, bold, ring tailed, and black eagles; osprey bird; crowned, common, white, rough footed, erne, jean le blanc, Brazilian, Oroonoko, eagle of Pondichery, and vulturine eagle.



CONDOUR OF AMERICA.

IT is doubtful which this bird is most allied to, the eagle or the vulture; its force and vivacity resembling the former, while the baldness of the head and neck are like the latter. No bird can compare with

it for size, strength, rapacity, and swiftness of flight. It is, therefore, more formidable than the eagle to birds, beasts, and even to mankind. The rarity of this pernicious and destructive bird, is another instance of the great care of providence in proportioning these creatures, according to their utility or ferocious propensity; for, were the condour as prolific, or common as others of the feathered tribe, it would spread universal devastation.

Sir Hans Sloane says, one was shot by Captain Strong, not far from Mocha, an island in the South Seas, on the coast of Chili, as it was sitting on a cliff by the sea side. The wings, when extended, measured, from each extremity, sixteen feet. One of the feathers, which is now in the British Museum, is two feet four inches in length, one inch and a half in circumference, and weighed three drachms, seventeen grains and a half.

According to Garcilaso de la Vaga, several have been killed by the Spaniards, which in general measured fifteen or sixteen feet from wing to wing. To prevent the too fatal exercise of their fierceness, nature has denied them such talons as the eagle. They have only claws, which are as harmless as those of the hen. Their beaks are, however, strong enough to tear off the hide, and penetrate the bowels of an ox. Two of them will attack and devour a cow or a bull; and it has often happened that boys of ten years of age have fallen a prey to them. The inhabitants of Chili are, therefore, in continual dread lest their children should be devoured in their absence. In order to allure them, they expose the form of a child, made of a very glutinous clay, on which they dart with such rapidity, and penetrate so deeply with their beaks, that they cannot disengage themselves. The Indians assert, that they will seize and bear aloft a deer, or a young calf, as easily as eagles do a hare or a rabbit.

Nature apprises every one of its approach, by causing it to make so great a noise with its wings, as almost to occasion deafness. The body is as large as that of a sheep, and the flesh as disagreeable as carrion. Thus man loses no food from the providential scarcity of this terrific and devouring creature. Forests, not affording room for its flight, are never infested with it.

depredations; they, therefore, dwell mostly in mountains, visiting the shores at night, when rain or tempests drive their finny prey thither for shelter.

They are chiefly to be found in the deserts of Pachomac, where men seldom venture to travel; those wild regions being alone sufficient to inspire the mind with a secret horror, affording no other music but the roaring of wild beasts, and the hissing of serpents; while the adjacent mountains are rendered equally terrible from the visits of this destructive bird.

This bird is thought, by naturalists, to be the same as the rock, found in Arabia, the Tarnassar, in the East Indies, and the large vulture, in Senegal.



KING OF THE VULTURES.

THIS bird differs from the eagle, in its indelicate voracity; preying more upon carrion than live animals; which disposition seems wisely adopted by providence, as a prevention against the nauseous and epidemical effects that might otherwise arise from carcases being left to putrify on the earth. Its preying on the eggs of crocodiles, which lay each of them at least two or three hundred, in the sands, is another dispensation of divine providence, in order to prevent too great an increase of those voracious and destructive animals.

The form of this bird is distinguished from the eagle, by the nakedness of its head and neck, though, not being destined to prey particularly on living birds, &c. their flight is not equal to that of the eagle, falcon, or hawk. But, being allured by putrefaction, their sense of smelling is proportionably exquisite. Happily for us, it is a stranger to England, while it is found in Arabia, Egypt, and many parts of Africa and Asia. There is a down under the wings, which in the African markets is frequently sold as a valuable fur.

The vulture is considered so serviceable in Egypt, that, in Grand Cairo, large flocks are permitted to reside, in order to devour the carrion of that great city, which would otherwise be liable to frequent pestilence.

It is serviceable, likewise, in those countries where hunters pursue, and destroy animals merely for the skins; as they follow, and devour the bodies before they lie long enough to corrupt the air; which they do so greedily and voraciously, as to be unable to fly. But, when they are attacked, they have a power of lightening their stomachs, so as to effect their escape.

This bird is somewhat larger than a turkey cock, and remarkable for the uncommon formation of the skin covering the head and neck (which is of an orange colour) being bare. The eyes are surrounded with a skin of a scarlet colour, and have a beautiful pearl coloured iris. Although the king of the vultures stands confessedly the most beautiful of this deformed race, its habits are equally disagreeable with the rest.

The flight and cry of these birds, being particularly observed and attended to by the Roman Augurs, must have arisen from their considering, where they were most inclined to direct their flight, from the previous sense they had of an approaching slaughter; which the Romans always flattered themselves was to ensue of the enemies they were to engage.



GOLDEN VULTURE.

ALTHOUGH this bird is larger, yet, in other respects it resembles the golden eagle. It is four feet and a half in length. The lower part of the neck, breast, and belly, are red: The back is covered with black feathers, the wings and tail with those of a yellowish brown. Though the various species differ

very much in respect to colours and dimensions, yet they are all easily distinguished by their naked heads, and beaks partly straight and partly hooked.

In this class are also to be ranged, the golden, ash coloured, and brown vultures, natives of Europe; the spotted and black vultures, of Egypt; the Brazilian, and the bearded vultures.



FALCON.

THE dignified sport of falconry, which formerly distinguished the recreation of the English nobility, has been long discontinued. A person of rank scarcely ever appeared without his falcon, which, in old paintings, are the criterion of titular distinction. Harold, afterwards king of England, was painted with a falcon on his hand, and a dog under his arm, when he was going on an important embassy. To wind a horn, and carry a falcon with grace, were then marks of being well bred. Learning was left for the study of children, born in a more humble sphere.

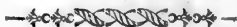
In the reing of James I, Sir Thomas Monson gave one thousand pounds for a cast of hawks. An unqualified person, taking the eggs of a hawk, even upon his own ground, was fined and imprisoned, at the pleasure of the king. Edward III, made it felony to steal a hawk.

The generous hawk is distinguished from the baser race of kites, sparrow hawks, and buzzards, by the second feather, which in this kind is the longest; whereas, in the other kinds, the fourth feather is the longest. They also possess natural powers of which the other race are destitute. They pursue their game with more swiftness and confidence, and, from their generosity of temper, they are so attached to their feeders, as to become very tractable.

The hawk or falcon pursues the heron, kite, and woodlark, by flying perpendicularly upward, which

affords the greatest diversion; while other birds, by flying horizontally, diminish the pleasure of the sportsmen, as well as endanger the loss of his hawk.

The Norwegian breed of hawks were of such esteem in the reign of king John, that, in consideration of a present of two of these birds, that monarch allowed a friend of Jeffry Fitzpierre to export one hundred weight of cheese; a very great privilege in those days. We learn further, from Maddox's Antiquities, that the interest of Richard I, was obtained, by the present of one Norway hawk, in favour of John, the son of Ordgar.



GYR FALCON.

THIS species of falcon, which exceeds all others, both in size and elegance, is nearly as large as an eagle. The bill is hooked and yellow, and the plumage mostly white: The feathers of the back and wings have black spots, in the shape of hearts: The thighs are clothed with long feathers, of the purest white: The legs are yellow, and feathered below the knees. This bird is sometimes found entirely white. It was used to fly at the noblest game, such as cranes, herons, &c.

In this species of birds may be classed, the peregrine falcon, sacre, mountain, grey, white, Tunis or Barbary falcons, and Falcon Gentle.



FALCON GENTLE.

WHICH is known from other falcons by the neck, being surrounded with a light yellow ring.

Many mistakes having been made with respect to the names of this species of bird, we think it necessary to inform our readers, that they are called according to the times they are taken, after the following names :

If taken in June, July, or August, they are

called, - - - - - GENTLE

- - - - - Sept. Oct. Nov. Dec. - PILGRIMS

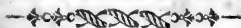
- - - - - Jan. Febr. March - - ANTENERE

and if once moulted, it is called HAGAR, from the Hebrew, which signifies A STRANGER.



GOSHAWK.

THIS bird, which is larger than the common buzzard, is longer in form, and more elegant in shape. The breast and belly are white, beautifully streaked with transverse lines of black and white. This species, as well as that of the sparrow hawk, are distinguished by the name of short winged hawks, from their wings, when closed, not reaching to the end of the tail. This bird was formerly much esteemed, and taught by falconers to pursue cranes, wild geese, pheasants, and partridges.



KITE.

THE kite differs from all the rest of the species, by its forked tail, slow, floating motion, and being almost continually on the wing. Instead of using the wings when flying, it appears to rest on the bosom of the air.

Pliny supposes the invention of the rudder to be owing to the notice mankind have taken of the kite, in using its tail to direct its flight. Every bird of the air being capable of escaping the pursuit of the kite, it is obliged to subsist on accidental carnage, which it devours like a famished savage, without the least mercy or moderation.

Hunger often makes them so desperate, as to attack broods of chickens, ducklings, &c.

It usually breeds in large forests, or woody mountains. The hen lays two or three eggs, which, like those of other birds of prey, are larger at the narrow end than those laid by the other species. When this bird flies high, it is said to portend fine and dry weather. It has been, though erroneously, reckoned amongst birds of passage. It is twentyseven inches in length, five feet in breadth and in weight about fortyfour ounces. This bird, possessing no peculiarity of plumage, we omit giving an uninteresting detail of its feathers; we shall, therefore, only observe, that they sometimes differ in colour; some being entirely tawny, while others are variegated.

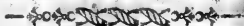


COMMON BUZZARD.

THIS bird, which is remarkably sluggish and inactive, will frequently remain perched a whole day on the same bough. Frogs, mice, and insects, are its chief subsistence. The reason for preferring which, seems to arise from natural indolence, they being more easily obtained than birds, which it will not take the trouble of flying after. It lives in the summer by robbing nests, and sucking the eggs. In countenance, it more resembles the owl, than any bird of day. Should the hen buzzard be killed, the cock will hatch, and rear the young. They breed in large woods, and generally build on an old crow's nest. The young ac-

company their parents for some time after they can fly, which distinguishes them from other birds of prey. They vary considerably in their plumage; some having brown breasts and bellies, while others are only marked on the breast with a white crescent. They are about two feet long, four feet wide, and thirtytwo ounces in weight.

Of this species there are also, the honey, moor and Turkey buzzard; the hen harrierr, kestrel and hobby.



SPARROW HAWK.

THERE is a great difference in size between the male and female of this bird; the latter, weighing nearly twice as much as the former. They vary also considerably in their plumage; though the back, head, coverts of the wings and tail, are generally of a blue grey. It makes great devastation among pigeons and partridges.

The sparrow hawk was in such veneration among the Egyptians, that they chose it as the representative of their God Osiris, and punished with death every person who should kill one. The Greeks consecrated it to Apollo. It was also made one of the symbols of Juno, from its fixed and piercing sight which resembled the jealous observance of that Goddess.

MERLIN,

WHICH is the smallest of hawks, and not much larger than a thrush, has been known to kill quails and partridges, and display such courage as to render itself as formidable as birds of six times its magnitude.

The female, like that of all birds of prey, is considerably larger than the male. It was known to the ancients by the name of *Llamysden*.



GREATER BUTCHER BIRD.

THIS bird leads a life of perpetual hostility. It is about the size of a blackbird.—From its carnivorous appetite, it participates of the nature of birds of prey, while, from its slender legs, feet and toes, it partakes of the nature of those that live upon grain, insects, &c.

When this bird has killed its prey, it hangs it upon a thorn, as a butcher hangs up a carcase, and pulls it to pieces with his bill. Its usual food is small birds, which it seizes by the throat, and strangles in an instant. The old and young seek their prey in concert. It is ten inches in length, fourteen inches broad and three ounces in weight. The back and coverts of the wings are of an ash colour, and the sides of the head are white.

Of this species are also to be found, the Redbacked Butcher Bird, the Woodchat and the Least Butcher

Bird; which latter, although not much larger than a titmouse is a bird of prey. The head is of a fine grey, and beneath each eye there is a tuft of black feathers.



OWL.

HAVING described the rapacious birds of day, we proceed to those of night, which are equally cruel, and more treacherous. That no link in the chain of nature should be incomplete, these birds employ the night in devastation, preventing by this means any chasm in the round of time. They are distinguished from all other birds by their eyes, which are better adapted for the purposes of darkness than of light. Like tigers and cats which subsist by their nocturnal watchfulness, they are endued with the power of discerning objects, at a time when we should conceive it to be totally dark. The idea, however, that they see best in total darkness, is erroneous; twilight, which is the medium between the glare of day, and the gloom of night, being the time they see with the greatest perspicuity. But the faculty of sight differs greatly in the different species.

The note of the owl is truly hideous; and such is the antipathy of the small birds to it, that, if one appears by chance in the day time, they all surround, insult and beat him. So great, however, is the utility of this bird, that one owl will destroy, in the same space of time, more mice than six cats.

The white, or barn owl, which is the most domestic, can see the smallest mouse peep from its hole; while the brown owl is frequently observed to have a sight strong enough to seek its prey in the day time. Destined to appear by night only, nature seems to have thought it unnecessary to lavish on them any

beauties either of form or plumage, as they would have been lost to general contemplation.

As a subject of vigilance, this bird was consecrated to Minerva, and seems to fill that chasm between quadrupeds and the feathered race, which is observable between cats and birds.



GREAT HORNED OWL,

WHICH is nearly as large as an eagle, has some feathers rising from his head, which he can elevate or lower, at pleasure. The back and coverts of the wings, are varied with deep brown and yellow. It usually breeds in caverns, hollow trees, or ruined buildings, making their nests nearly three feet in diameter.



LESSER HORNED OWL.

THE wings of this bird are so long, that when closed, they reach beyond their tails. The feathers of the head, back and coverts of the wings are brown, edged with yellow : The tip of the tail is white.

There is also a smaller kind of horned owl, which is not much larger than the thrush.

Of owls, there are also the little owl, which is remarkable for its elegance ; the screech owl, which has blue eyes and iron grey feathers ; and the brown owl, which remains all day in the woods.

Notwithstanding this species of birds differ so materially, both in size and plumage, their eyes are all adapted for nocturnal vision, to enable them to seek their food, which they always do by night. They have strong muscular bodies; powerful feet and claws, for tearing their prey; and stomachs properly adapted for digestion.



BIRDS of the POULTRY KIND.

THIS class is the most harmless, as well as the most serviceable to man. It not only furnishes the table of the epicure with various dainties, but also forms a considerable addition to the necessaries of life. The rapacious kind may amuse us in the sports of the field, and the warbling songster, with its melodious voice, delight us in the grove; but none can equal the essential service, and solid advantages of the domestic poultry. They are a source of wealth to the peasantry, who keep them at a small expense, especially at farm houses. and where they have a range of common; which the prodigious influx of eggs and fowls, continually pouring into the markets of this great and opulent metropolis, daily testify.

They were originally of foreign origin; but time and the climate has so inured them to us, that they are now considered as natives; and, by their great increase, form no inconsiderable part of merchandize.

As the rapacious kind are formed for war, this seems equally desirous of peace. They are naturally indolent and voluptuous; have a strong stomach, usually called a gizzard, which makes them very voracious; while pent up, even, and separated from their companions. they still enjoy the pleasure of eating, and will grow fat, while many of the wilder species pine away, and refuse even common sustenance.

It is particularly remarkable of this class of birds, that, though naturally fond of society, their sensual appetites are such, as to admit of no connubial fidelity, which is such a distinguishing characteristic in birds of the rapacious kind, such as the eagle, &c. whose connexions, when once formed, never end but with their lives.

The cock, like the bull, wild and irregular in his appetites, ranges from one hen to another, struts about the farm yard, like a Sultan in his seraglio, and considers every one of his sex as his rival and enemy. Careless of his progeny, he leaves to the female all the care of providing for the young ; which she performs with the greatest maternal care and tenderness, till they are capable of providing for themselves.

The hen, equally devoid of fidelity and attachment with the cock, when he meets and engages with a rival, stands an unconnected spectator of the conflict, and readily receives the embraces of the conqueror.

The cock, when opposed to a bird of prey, is timorous and cowardly ; but when in opposition to one of his own species, he is naturally valiant, seldom leaving his antagonist until he is killed or taken from him ; many shameful instances of which are too frequently exhibited in different parts of the world.

This class includes also the turkey, Guinea hen, pheasant, bustard, grouse, partridge and quail ; but, as their several propensities are not so particularly distinguishable as the preceding, we shall content ourselves with describing them in their proper places.

Most of the birds of this class are remarkable for the whiteness and purity of their flesh, as well as for their bulk. They have strong bills to pick up their food, which principally consists of grain and worms, and short concave wings, which render them slow in flight.

COCK.

OF all birds, the cock seems to have been the first reclaimed from the forest, to gratify the luxury and amusement of man. This bird, in its domestic state, undergoes many variations. In Japan, there is a species of this fowl, which seems to be covered with hair

instead of feathers. These varieties show the length of time they must have been under the dominion of man ; the departure from their original characteristic arising from the mixture of breeds brought from different countries, which have been allowed to corrupt, without improving the stock. That the cock was originally imported from Persia, is generally acknowledged. It has been, however, so long in England, that, amongst the ancient Britons, it was one of the forbidden foods.

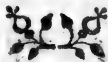
From the very great length of time this bird has been resident there, we should be apt to doubt whether it was natural to any other country, was it not sometimes to be found in the islands of the Indian ocean, where it still retains its wild and natural liberty.

Aristophanes calls it the Persian bird, in order to show the country where it is produced.

The cock is a very gallant bird, and will fight with his own species, especially for the possession of his hens, with amazing courage and perseverance.

To the bravery of this bird, even princes themselves, in different parts of the world, have, to their shame be it spoken, owed a principal part of their amusement. Heathens might have fallen into this error ; but that a race of people, calling themselves christians, who are stiled the patrons of compassion and humanity, should take delight in setting these inoffensive birds to destroy each other, can only be attributed to a barbarous propensity in human nature, which we cannot but lament.

Exclusive of this, there are two other species of cocks, called the Hamburgh and Bantam cocks ; the latter of which is well known, by its diminutive size and feathered legs.



PEACOCK.

THE Italians have observed, not unaptly, that this bird has the plumage of an angel, the voice of a demon and the appetite of a thief. They were originally from India, and are still found in vast flocks in the islands of Ceylon and Java. The beauty of the peacock deprived it first of its liberty; which proves to demonstration, that beauty is not confined to the destruction of the human species. So early as in the time of Solomon, according to the tenth chapter of the first book of Kings, apes and peacocks are found among the articles that were imported from Tarshish. They were so much esteemed by the Greeks, that a pair of them was reckoned worth upwards of thirty pounds sterling. When first introduced into Greece, they were made a public exhibition. Hortensius, the orator, was the first who served them up as an entertainment for the table. They were afterwards considered the choicest of viands, and one of the greatest ornaments of the feast: But their palatable fame soon declined, as may be observed by the conduct of Francis I, who served them up in their plumage, by way of ornament, not as a dainty.

To describe the peacock as concisely as possible, we have only to observe, that the head, neck and beginning of the breast, are of a deep shining blue; on the crown, is a tuft of green feathers; and the tail, which may be said to vie in splendor with the rainbow, (the colours being so beautifully intermixed) they display with all the seeming vanity of a conceited beauty. The gold, chesnut, green and blue of the eyes, are so happily disposed, that they form the finest harmony, and most beautiful contrast of colour, that can possibly be conceived. The bird himself is so sensible of this superiority of plumage, which certainly exceeds every thing of the kind in nature's works, that he is never so proud as when he exhibits this unrivalled work of the Divine Artist, to whom he is indebted for his form and existence.

PHEASANT.

THE plumage of this bird is so beautiful, that many esteem it next in rank to the peacock. Cræsus, king of Lydia, when seated on his throne, arrayed in all the splendor of the East, asked Solon, if he had ever seen any thing so fine? To which the philosopher replied, that, after having seen a pheasant, no other finery could astonish him.

Although the pheasant is, certainly, a most beautiful and elegant bird, yet there are many others, as well as the peacock, which can vie with it in plumage. Its chief beauties are in the eyes, which are yellow, surrounded with scarlet, and spotted with black; black feathers, intermingled with a glossy purple, adorn the fore part of the head; while the top of the head, and the upper part of the neck, are tinged with a darkish, shining green: The back, sides, breast and shoulders, are of a black colour, changing to purple, according to the situation of the spectator, under which purple is a transverse streak of a gold colour.

The tail is about eighteen inches long; the legs, feet and toes, are of a horn colour; and two of the toes are connected by a membrane.

This bird is not only beautiful to the eye, but extremely delicate to the taste. But, as if it disdained the commerce of man, it has left him to take shelter in the woods and forests; to which unlimited freedom may be attributed the exquisite flavour of its flesh.

GOLDEN PHEASANT OF CHINA.

THIS bird, which is said to excel all the rest in beauty, is so prolific, that, when in its wild state, it will lay twenty eggs, and upwards, being double the number they lay when domesticated. The pheasant, of all wild birds, is most easily shot.

Besides those already mentioned, there are the horned Indian, red China, white China, peacock and Brazilian pheasants.



BUSTARD.

IS the largest native land bird of Britain; the male generally weighing twentyfive pounds. It is about nine feet broad, and four feet long. The head and neck are of an ash colour, and the back is barred transversly with black, bright and rust colour: The greater quill feathers are black; those on the belly are white; the tail, which consists of twenty feathers, has broad red and black stripes; and the legs are of a dusky hue.

The female is about half the size of the male. They were formerly much more numerous than at present; but the increased cultivation of the country, added to the extreme delicacy of its flesh, has caused a great decrease of the species. Another circumstance, equally unfavourable to this bird, is its amazing size, which renders it so unwieldy and slow in flight, as to render it almost impossible to escape the aim of the sportsman.

Bustards are principally found on Salisbury Plains, Newmarket and Royston Heaths, Dorsetshire Uplands, and those of Marsh or Lothian, in Scotland. They run very fast; and, although slow in flight, will, when on the wing, continue their progress, without resting, for several miles. It is with such difficulty they take flight, that they are frequently run down by greyhounds. They seldom wander above twenty or thirty miles from their haunts. They live on berries, which grow on the heaths, and on earthworms, that are found on the downs before the sun rises.

As a security against drought, nature has furnished the male with a pouch, that will contain near seven quarts of water, with which, it is supposed, they accommodate and supply the female while sitting, or the young, until they can fly.

It lives about fifteen years, but cannot be domesticated from the want of a sufficient supply of the food which they delight in, which they can only obtain in their natural state.


There are two other species of this bird, which are called the Indian bustard and little bustard.



BIRDS of the PIE KIND.

THIS class of birds, though not formed for war, delight in mischief, and are perpetually harrassing other birds, without the least apparent enmity; and includes all that noisy, restless, chattering tribe, from the raven to the woodpecker, which hover about our habitations, and make free with the fruits of our industry.

Though they contribute the least of any birds to the pleasures or necessities of man, they are as remarkable for instinct, as for their capacity to receive instruction; cunning and archness are peculiar to the whole tribe. They have hoarse voices, slender bodies and a facility of flight which baffles the pursuit of all the rapacious kind. Of this class we select the following, as most deserving our attention.

**TOUCAN,**

WHICH in size and shape resembles a Jackdaw, has a remarkable large head, to support an enormous bill, which, from the angles of the mouth to the point, extends six inches and a half in length, and upwards of two inches in breadth, in the broadest part, not much thicker than parchment. Some naturalists have thought, but erroneously, that the toucan had no

nostrils ; this mistake, in all probability, originated from their being placed in the upper part of the bill, and, consequently, neatly covered with feathers.

Between the white on the breast, and the black on the belly are a number of red feathers, most beautifully formed in the shape of a crescent, with the horns pointing upwards. The toes are disposed in the same manner as those of the parrot, two before and two behind.

The toucan is so easily tamed, that it will hatch and rear its young in houses. Its chief food is pepper, which it is said to devour like a glutton. Pozzo, who bred one of these birds, says, that it resembles a magpie, both in voice and motion. Naturalists seem to think, that the toucan uses its tongue to all those purposes for which other birds use their bills. This naturally accounts for the thinness of the beak, which seems only calculated as a sheath for the tongue, which is very large and strong.

This bird inhabits only the warm climates of South America, where it is much esteemed for the delicacy of its flesh, and beauty of plumage. The feathers of the breast are particularly admired by the Indians, who pluck them from this part of the skin, and, when dry, glue them to their cheeks, which they reckon an irresistible addition to female beauty.

When we contemplate the bird creation, we cannot consider without amazement, how variously nature has formed their bills, wings, feet and bodies, according to their different wants and peculiarities, occasioned either by situation or disposition ; a more striking instance of which cannot be adduced than in the bird just described.



GREAT SPOTTED WOODPECKER.

THIS bird is about nine inches long, sixteen inches in breadth, and two ounces three quarters in weight. The bill is of a black horn colour, and the forehead pale buff; the crown of the head is of a glossy black, and the hind part is marked with a deep rich crimson spot; the cheeks are white, bounded beneath by a black line, which passes from each corner of the mouth, and furrounds the hind part of the head; the neck is encircled with black; the throat and breast are of a yellowish white; the back, rump, coverts of the tail and lesser coverts of the wings, are black. The webs of the black quill feathers are elegantly marked with round white spots. The four middle feathers of the tail are black; the next are tipped with dirty yellow; and the ends of the two outermost are black. The legs are of a red colour.

The colours of the female are the same as in the male, except the crimson spot on the head.



GREEN WOODPECKER.

OF this bird there are many kinds and varieties, forming large colonies, in the forests of almost every part of the world. The wisdom of providence, in the admirable formation of creatures according to their respective natures, cannot be better exemplified than in the birds of this genus.

Woodpeckers, feeding entirely upon insects, and their principal action being necessarily that of climb-

ing up and down the trunks or branches of trees, have a long slender tongue, armed with a sharp bony end, barbed on each side, which, with the assistance of a curious apparatus of muscles, they dart to a great depth into the clefts of the bark, from whence they draw out the lurking insects.

When this bird discovers a rotten, hollow tree, it cries aloud, which alarms the insect colony, and puts them in confusion; by which means it is the better enabled to get at the prey. By thus destroying these insects, which are found sometimes on trees not entirely decayed, it should seem as if nature had formed this bird for the express purpose of cleansing such trees, as they are generally observed to thrive and flourish, after they have left them. They are likewise very useful in destroying ants, on which they feed, as well as on wood worms and insects. To take ants, they adopt the following curious stratagem: They dart their red tongues into the ant hill, which the ants, from the resemblance, supposing to be their usual prey, settle upon it in myriads, which is no sooner done than they withdraw their tongues, and devour them.

The green woodpecker is about thirteen inches long, twentyone inches in breadth, and weighs six ounces and a half. The bill is hard, strong and shaped like a wedge. Dr. Derham says it has a neat ridge running along the top, which seems as if it was designed by an artist, both for strength and beauty. The back, neck and lesser coverts of the wings, are green, and the rump is of a pale yellow.

To these may be added, the lesser spotted and Guinea woodpeckers.

BIRD OF PARADISE.

ACCORDING to some naturalists, there are nine different sorts of this bird; but Mr. Edwards describes only the three following; viz. The greater bird of Paradise, the king of the birds of Paradise and the golden bird of Paradise.

The bird of Paradise, as described by Moregrave, is about the size of a swallow. The feathers about the beak are as soft as silk, green and brown above; and black below; the upper part of the neck is of a gold colour, but lower down, it is gold, mixed with green; the long feathers on the sides, near the rife, are of a gold colour, and the other parts of a whitish yellow.

The king of the birds of Paradise, mentioned by Clusius, is the least of the species.

The golden bird of Paradise, has a gold coloured neck and beak; the feet and toes are yellow; breast and back pale orange colour; and the large feathers on the wings and tail, are of a deep orange colour.

The idea that these birds have no feet, is proved to be an error by Mr. Ray, who says, their feet are neither small nor weak, but large and long, armed with crooked talons, like birds of prey.

The great beauty and variety displayed in every part of the creation, continually affords, to the contemplative mind, fresh instances of the power, wisdom and goodness, of the Divine and Almighty Architect.

The bird of Paradise, which is a native of the Molucca Islands, exceeds every other bird of the pie kind in beauty; a proof, that those groves which produce the richest spices, produce also the finest birds. The inhabitants, sensible of the superiority of these birds, call them, by way of preeminence, God's birds.

They migrate with their king (which is superior both in size and plumage) about August, when the stormy season begins, and return when it is over.

There are two other birds of Paradise; one of which is found in the island of Ceylon, but has never yet been described; the other is called the pied bird of Paradise, has a blackish bill, like a duck, and a tail nearly as long as a magpie,



CUCKOO.

THE note of this bird is known to all the world; but its history and nature remain yet undiscovered. Some naturalists have asserted, that it devours its parent, changing its nature with the season, when it becomes a sparrow hawk. But these fables are now sufficiently refuted. It, however, still remains a secret where it resides, and how it subsists in winter.

The claws and bill of the cuckoo are much weaker than those of other rapacious birds. It is distinguished from all others, by its note, and the round prominent nostrils on the surface of the bill. The head, the upper part of the body and the wings, are beautifully striped with tawny colour and transparent black; the legs are very short, clothed with feathers down to the feet; and it has a large mouth, the inside of which is yellowish.

This bird is the harbinger of spring, at which time it returns, to glad the husbandman with his wonted note, as a signal that nature now resumes her vernal beauties. The note, which is a call to love, is used only by the male, and continues no longer than the pairing season.

The young are generally nursed by a water wagtail or hedge sparrow, their parents always unnaturally deserting them.

The note of the cuckoo is pleasant though uniform; and owes its power of pleasing to that association of ideas which frequently render things agreeable, that would, otherwise, not be so in themselves. Were we

to hear the cuckoo on the approach of winter, we should think it a most lamentable noise; but, hearing it as we do, at the approach of spring, we cannot avoid thinking it the most agreeable, from its being attached to all those enjoyments, with which we know nature is then teeming for our accommodation.

It is about fourteen inches in length, twentyfive in breadth, and weighs five ounces, little more or less.



BIRDS of the SPARROW KIND.

DESCENDING from the larger to the smaller kinds, we come to this class of birds, which live chiefly in the neighbourhood of man, whom they seem to consider as their best friend, filling his groves and fields with harmony, that elevates his heart to share their raptures. All other birds are either mute or screaming; and it is only this diminutive tribe that have voices equal to their beauty. Great birds seem to dread the vicinity of man, while these alone remain in the neighbourhood of cultivation, warbling in hedge rows, or mixing with the poultry, in the farm yard.

They are remarkably brave; often fighting until one of them yields up its life with the victory. When young, they are fed upon worms and insects; but, when grown up, they feed principally upon grain. As they devour great swarms of pernicious vermin, which destroy the root before the vegetable is grown, they are particularly useful to the farmer and gardener.

The best vocal performers of this musical tribe, are, the nightingale, thrush, blackbird, lark, red-breast, blackcap, wren, Canary bird, linnet, goldfinch, bullfinch, brambling, yellow hammer and filkin.

This class being too extensive to be fully described in so small a volume, we shall select only a few of the most curious, beginning with the BLACKBIRD.

BLACKBIRD.

THIS bird, which is the herald that ushers in the welcome spring, seems, by its melody, to awaken the rest of the feathered creation from their lethargy, and allure them to the pleasures of the approaching season. They generally breed about the latter end of March, or beginning of April, laying four or five eggs, which are of a blueish green colour, and irregularly marked with dusky spots. Their nests are constructed, in a very ingenious manner, with moss, twigs and fibres of roots strongly cemented; the insides being plaistered with clay, and covered with hair, and other soft materials. They usually build in hedges, near the ground, and before the foliage expands, which, added to the magnitude of the nest, renders it easy to be discovered.

The plumage of the male, when at full age, which is a year, is of a fine deep black, while the bill, as well as the edges of the eyelids, are of a beautiful bright yellow; but before they attain this age, the bill is dusky, and the plumage of a rusty black.

They continue singing till the moulting season draws near, when they naturally desist; they will, however, when they have done moulting, resume their note for a short time previous to the winter.



STARLING.

THE stare, or starling, may be distinguished from the rest of the sparrow tribe, by the variegation of its feathers, which in some lights show a glossy green,

and in others a beautiful purple. The feathers of the head, neck and upper part of the breast are black, interspersed with feathers of different colours, which causes it to vary, as above described.

Starlings assemble in vast flocks during winter, and feed upon worms and insects; but, on the approach of spring, they meet in the fields, as if to consult; during this time, which lasts several days, they seem to abstain from all kind of nourishment.

Such is the capacity of this bird to receive instruction, that it will imitate the human voice to the greatest nicety. Sterne, in his *Sentimental Journey*, gives a very entertaining account of one of these birds which he met with on his travels.

If a starling is taken when about ten days old, and properly taught, it is a very valuable bird, and will fetch frequently five or six guineas.



GREAT TITMOUSE.

THIS bird, which is also called the oxeye, is about six inches in length, nine inches broad, and in weight half an ounce. The bill is black, straight and about half an inch long; the tongue is broad, ending in four filaments; the head and throat are black, cheeks white, back and coverts of the wings, green; quill feathers dusky, tipped with blue and white; the lesser coverts are blue, the greater ones tipped with white; the tail, which is about two inches and a half in length, is black, edged with blue.

Although these birds occasionally visit our gardens, yet they chiefly inhabit the woods, where they build their nests in hollow trees, laying nine or ten eggs. Their food consists, principally, of insects, which they find in great numbers in the trees. Thus we perceive,

that birds are formed, not only to delight the ear and please the eye, but also to serve us, by destroying those vermin, which do incredible mischief to our rustic possessions. As we can have no enjoyment, however, without some mixture of alloy, the titmouse frequently injures our fruit gardens, by destroying the tender buds.

Like the woodpecker, it is continually running up and down the trunks of trees, searching for food.



LARGE CRESTED HUMMING BIRD.

THERE is a great variety in this species of birds, which, although the smallest of the feathered tribe, are by far the most beautiful, inoffensive and delightful. They are from the size of the wren to a humblebee. What a beautiful contrast does this little bird afford, in the scale of creation, when presented by the side of the largest ostrich, forming the two extremes! and how can we sufficiently admire the workmanship of providence, in having created such varieties for our use, entertainment and assistance.

In America, they swarm like bees, ranging from flower to flower, extracting the sweets; in which they seem to connect the insect and bird creation together.

The head of this beautiful bird is adorned with a crest, green at bottom and bright gold colour at top; the body, and under the wings, is brown and green intermixed, and glossed with a beautiful red; the bill is black, straight and slender; the eyes black and sparkling.

They are called humming birds, from the noise produced by the motion of the wings. Their nests,

about half the size of a hen's egg, are curiously suspended at the end of the twigs of an orange or pomegranate tree.

There are also, the larger humming bird, long tailed black capped humming bird, little humming bird with crooked bill, green and ash coloured humming birds.



HOOPOE.

THIS very handsome feathered visitant, according to the ingenious Mr. Walcot, in his Synopsis, just published in quarto, answers the following very curious and interesting description:

On the top of the head is a crest, consisting of a double row of feathers, the highest of which are about two inches in length, of a pale orange colour with black ends; the neck is of a pale reddish brown, the upper parts of which are crossed with broad bars of black and white; the lesser coverts of the wings are of a light brown, and the lower parts white; the tail, which is white, consists of ten black feathers, which are marked with a white crescent; the legs are black. It is twelve inches in length, and nineteen inches in breadth.

A few of these beautiful birds migrate to this country in the summer, and feed on insects. It is said to make no nest, but to lay about seven ash coloured eggs, in the holes of trees, walls, or on the ground.

KING FISHER.

THIS beautiful bird, which inhabits almost every country, may be said to vie, in elegance of plumage, with the parrot, the peacock, or even the splendid shadings of the humming bird. It is larger than the swallow ; mostly frequents the banks of rivers, and makes its nest at the root of some decayed tree, which it lines with the down of willow. They lay from five to nine white eggs before they sit, and hatch twice a year. In this bird we have an instance of parental and conjugal affection, which might shame many of the human race ; as a proof of which, that ingenious author, Reaumur, says, that he had a female of this species brought to his house, upwards of three leagues from her nest. After having admired her beautiful colours, he let her fly again, when the fond creature was observed instantly to return to the nest where she had just before been made a captive ; when joining her mate, she began again to lay, though it was the third time, and the season very far advanced. She had seven eggs each time. The fidelity of the male exceeds even that of the turtle. While the hen is sitting, and during the helpless state of her callous brood, he supplies her with fish, which he takes with the greatest expertness, and in large quantities ; inso-much, that at this season, she, contrary to most other birds, is fat, and in fine feather.

Several writers have confounded the halcyon with the king fisher. The halcyon, it is said, breeds in May, in the banks of streams, near the sea ; after the first hatch is reared, it returns to lay again in the same nest. Pliny and Aristotle say, that the halcyon is common in the seas of Sicily ; that it sits only a few days, in the depth of winter, in a nest that swims on the sea ; during which time, it is said, the mariner may sail with the greatest safety. But another author, with more probability, says, that the little halcyon bird is found on the shores and rocks up the Mediterranean, near Sicily ; that, at the latter end

of summer, she builds a nest, with fish bones and sea weeds, so curious and impregnable, as to swim and hatch her young on the sea, which at that time is particularly calm and serene. This has given rise to a proverbial saying, when we allude to any particular period of our lives, wherein we have experienced uninterrupted happiness, which are called *halcyon days*.



BIRDS of the CRANE KIND.

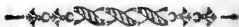
THIS class is inferior to every other in building their nests, being less curious than those of the sparrow kind; the method they use to obtain their food, is also less ingenious than those of the falcon kind; the pie kind excel them in cunning; while the poultry kind are more prolific. None of this kind being, therefore, protected by man, they lead a precarious life in fens and marshes, where they feed upon fish and insects; for which purpose nature has provided them with long necks, to enable them to dive for their prey, and long legs to keep their bodies dry and clean.

Those only which feed on insects are eatable.

STORK.

THIS bird is similar to the crane, but more remarkable both in figure and disposition. The feathers are white and brown; and the nails are flat, like those of a man. It makes no other noise, but that of clacking its under bill against the upper. Contrary to the general disposition of nature, it has as much, if not more filial affection toward its parents, than paternal affection for its offspring; for, when the old ones are so far advanced in years, as to be incapable

of providing for themselves, the young ones will serve them with food in the hour of necessity, cover and cherish them with their wings, and even carry them on their backs to a great distance. What an example is this of filial piety ! Who can observe this affectionate bird, feeding and defending its aged and helpless parent, till death relieves them from their anxiety, without exclaiming, *O ye children, imitate this amiable example ; let not a simple bird upbraid and condemn you ; but, on the contrary, let it stimulate you to the discharge of this most pleasing duty ; let it recal to your mind the anxious days and sleepless nights they have endured in nursing, protecting and promoting your welfare ; and you will not fail to imitate the stork, in soothing their decline of life, with the lenients of your love, care, obedience and gratitude.*



HERON.

THIS bird may be distinguished from the crane and stork, by its smaller size ; by the bill, which is much longer in proportion ; and also by the middle claw of each foot, which are toothed like a saw, to enable it to seize and more securely hold its slippery prey.

So numerous is the tribe of herons, that Brisson has enumerated fortyseven different sorts. Though excessively voracious, they are always lean and hungry, weighing no more than about three pounds and a half each, notwithstanding they measure three feet in length, and five in breadth. Although it is most formidably armed with bill and claws, it is so cowardly as to fly from a sparrow hawk. Fish and frogs are its chief food ; but it cannot endure a long abstinence. Its voracity is such, that Willoughby says,

one of them will destroy 15,000 carp in six months. It lives among pools and marshes, where it wades after its prey; and builds in the highest trees, or on cliffs hanging over the sea.

The flesh of this bird, which is now thought disgusting, was formerly much esteemed. What an instance is this of the capricious taste of man!

Keysser says, that the heron very frequently lives to the age of sixty years.



EGRET, OR GREAT WHITE HERON.

THE length of this bird, from the bill to the claws, is four feet and an half, and to the end of the tail, three feet and a quarter; and the weight about two pounds and a half. It is entirely white, which distinguishes it from the common heron, which is rather larger, has a longer tail and no crest.

The lesser white heron only differs in size, and by having a crest.

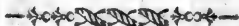
The little white heron, according to Catesby, has a crooked red bill, with a yellow iris on the eyes, a white body and green feet.

To the above may also be added, the yellow and green heron, found near Marfeilles; the bill of which is black above, yellow below and about three inches long; the iris, as well as that part of the neck, next the chin, are white; but the rest of the neck, top of the head, the breast and belly, are variegated with brown lines; the feathers on the back are black; the wings are yellowish, spotted with black; and the tail is stuck with feathers greatly resembling hair. The thighs are of an ash colour; and the feet are black with yellow claws.

LITTLE, OR BRAZIL BITTERN.

THIS bird is smaller than the common pigeon, although the neck is seven inches in length. The skin, at the base of the bill, is yellowish; the upper part of the head is of a steel colour, interspersed with pale brown feathers; the neck, breast and belly, are whitish; and the back is a mixture of black and brown; the long feathers of the wings are of a greenish hue, with a white spot, at each extremity: All the other parts of this bird, are beautifully variegated with black, brown and ash colour. The bill, which is long, straight and sharp, is black at the point; the iris of the eyes is of a gold colour; and the tail is so short, that it does not extend beyond the wings.

To the above may be added, of the same species, the common bittern, the North American bittern and the small bittern.



SPOONBILL, OR SHOVELLER.

WHO can behold this strange and singular bird, without adoring the wisdom of the great Creator of the Universe! The bill of this bird alone, is a convincing proof of the great care of Providence to preserve his creatures. This bill is about eight inches long, and of equal breadth and flatness from one end to the other; but, contrary to that of all other birds, instead of being widest at the base, and narrowest at

the point, is exactly the reverse, swelling into a broad rounded end, like the bowl of a spoon, from which it derives its name. It is, however, not hollow, like a spoon; but whether closed or open, it has a very singular appearance.

This bird is as white as snow, and, from its cleanliness, looks wonderfully pretty. It is common in Europe, and frequents the waters.

The bill is most peculiarly formed for the necessities of this bird; as feeding principally on frogs, which, by their cunning and activity, avoid the birds with pointed bills, the spoonbill, by being notched and toothed all round, is better adapted, not only to take these animals, but also to prevent their escape after they are caught.

The spoonbill of America, is of a delightful rose colour, or beautiful crimson.



FLAMINGO.

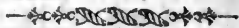
THIS bird is another instance of the care of the Creator, in providing for every creature according to their respective necessities. Thus we see the flamingo, which lives about the shallow shores of the sea and the mouths of rivers, provided with a most uncommon length of neck and legs; the latter of which are so long, that when walking in the water, it appears as if swimming; and the head, which is almost constantly under water, in search of food, makes the bird seem no larger than a goose, the body being then only perceptible. But how great is the astonishment of the spectator, when, on coming out of the water, it presents itself, in height of legs and neck, like an ostrich! Its height is not only superior to that of any other bird, but its beauty is scarcely to be equalled. The body is snow white; the wings are of

so bright a scarlet, as to dazzle the sight; and the long feathers are of the deepest black; the beak is blue, except the tip, which is black, and so singular in shape, as to appear broken; the legs and thighs, which are not much thicker than a man's finger, are about two feet eight inches in length; and the neck nearly three feet more; the toes are webbed, like those of the duck, which enables it to swim for the preservation of its life, which would be otherwise sometimes in danger, by the sudden rise of wind and water, while standing to a great depth in search of prey; by carrying it out to sea, where it might perish for want of subsistence.

A dish of flamingo's tongues, Dampier says, is a feast for an emperor.

Flamingos always go in flocks, and are found in vast numbers in Canada. Their nests are formed of mud, resembling very much our chimney pots. When the female lays her eggs, she sits astride the nest, with her legs hanging in the water.

"Those who admire," says a learned writer, "the wonderful means, by which the God of nature has contrived, that those animals, which he has endued with a lesser principle than reason, should provide themselves with food, and secure their existence, during a life in which they are liable to innumerable accidents, would add a great deal to the measure of their surprise, did they comprehend the variety of those means."



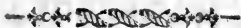
AVOSETTA, OR SCOOPER.

THE avosetta is distinguished from all other birds, by the bill, which turns up instead of down, being about three inches and a half in length, compressed very thin, and of a flexible substance, resembling

whalebone. The tongue is short; the head, and greatest part of the body, is black: The tail consists of twelve white feathers; the legs are very long, of fine blue, and featherless higher than the knee; the webs are dusky, and very deeply indented.

Nature has so peculiarly formed the bill of this bird, to enable it to scoop out of the sand the worms and insects, on which it feeds. It lays but two eggs, which are about the size of those of the pigeon, of a white colour, tinged with green and spotted with black.

These birds are frequently seen, in the winter, on the eastern shores of England; in Gloucestershire, the mouth of the Severn; and sometimes on the lakes of Shropshire. They have a lively chirping note, and very frequently wade in the waters.

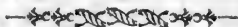


CURLEW.

THIS bird is, in length, from the top of the bill to the end of the claws, twenty-nine inches, and the breadth between the extreme points of the wings, when extended, is three feet four inches: The bill, which is nearly six inches long, is narrow, a little crooked, and of a dark brown colour; the legs are long, bare and of a dusky blue, with a thick membrane meeting at the first joint, and marked with irregular brown spots.

This bird is of a greyish colour, and the flesh very rank and fishy, notwithstanding the English proverb in its favour. They frequent sea coasts in large flocks, in the winter time, walking on the sands, in search of their prey, which consists of crabs and other marine insects. In the summer they retire to the mountainous parts of the country, where they pair and breed.

The lesser curlew, called also the wimbrel, greatly resembles this bird ; the chief difference being in the size, this weighing only twelve ounces, whereas the other weighs twentyseven ounces.



WOODCOCK.

THIS bird, which is smaller than a partridge, is fourteen inches in length, twenty six inches broad and about twelve ounces in weight. It has a straight bill, which is three inches long, the upper one falling a little over the under at the tip ; it is of a dusky colour towards the end and reddish at the base ; the forehead is ash colour, and a black line extends from the bill to the eyes ; the head, neck, back and coverts of the wings, are irregularly barred with red, black, grey and ash colour ; but, on the head, the black is most predominant. The eggs are long, of a pale red, with spots and clouds of a deeper colour. The flesh is reckoned a great delicacy.

In the summer, they inhabit the Alps of Norway, Sweden and other northern parts of Europe ; but, when the frost commences, they retire to France, Germany, Italy and Great Britain.



OF WATER FOWL IN GENERAL.

THE principal distinction between land and water fowl, is, that the toes of the latter are webbed for swimming. Those who observe the feet or toes of a duck, will easily conceive how admirably they are formed to move in that watery element, to which they are mostly destined. What man performs by art, when he closes his fingers in swimming, the water fowl is supplied by nature to perform. The toes are so contrived, that, when they strike backward, the broadest hollow surface beats the water; but, as they draw them in again, their front surface contracts, so as not to impede their progressive motion.

The legs of the water fowl are generally very short, which causes them to walk with much difficulty; they, therefore, seldom breed far from the sides of waters, where they usually resort.

Those of this class, which have long legs are ranked among the crane kind; such as the flamingo, avo-setta, &c. which, although their feet are webbed for swimming, they seldom make use of for that purpose; a proof that their webbed feet are given them for the purpose of preventing their sinking in the muddy shores, which they frequent in search of their prey.

We shall select a few of those most worthy the notice of our readers, taking the **PELICAN** as the first subject for description.

PELICAN.

TRAVELLERS, and those who are fond of the marvellous, have related strange accounts of this bird. The tale respecting the care of its young, has been so generally received, as to be frequently adduced as an example for man to imitate.

This bird is so unwieldy, as to be only adapted for the water; the beak, which is peculiarly uncommon, is about a foot long, and as thick as the fleshy part of a child's arm, very sharp at the point and of a blue and yellow colour; in other respects, it differs very little from the swan: The lower chap is made of two long flat ribs, with a rough membrane connected to both, in form of a bag, which extended to the throat, holds a considerable quantity of food, which supplies it in times of scarcity: Feeding her young from this bag, has so much the appearance of feeding them with their own blood, that it caused this fabulous opinion to be propagated, and made the pelican an emblem of paternal, as the stork had before been chosen, more justly, of filial affection.

The voice of this bird is harsh and dissonant: Some compare it to the braying of an ass, while others say it resembles the voice of a man, grievously complaining. David compares his groaning to [the pelican of the wilderness and the owl of the desert.

It lives sixty or seventy years.



FULMAR.

THIS bird is found in the island of St. Kilda, where it supplies the inhabitants with oil for their lamps, down for their beds, a balsam for their wounds,

a delicacy for their tables, and a medicine for their diseases. It likewise denotes a change of wind.

This bird is larger than the common gull; the bill is very strong, yellow and hooked at the end. Instead of a black toe, it has a kind of straight span. It feeds on the blubber of fat whales and on sorrel. It will leap and prey on a newly caught whale, even while alive; and is so voracious, as to eat until it is obliged, through repletion, to disgorge its food.

Whales are frequently discovered by means of these birds, which collect together in vast numbers and follow them, in hopes of prey, as sharks follow ships that have disease on board, with the same expectation. The blubber on which they feed is what furnishes them with the oil above mentioned. They seem, therefore, as if created for the purpose of supplying the inhabitants of that part of the globe with a commodity so essential to light them in those regions, which could not otherwise be cheered from the wintry gloom.



GULL AND PETREL.

OF these birds, the larger sort are most shy, and live at the greatest distance, while the smaller sort reside wherever they can take their prey. They are principally distinguished by an angular knob on the lower chap of the bill, which the petrels have not. The sea swallow, which is also of this species, has a straight, slender, sharp pointed bill. In their abodes and appetites, however, they all agree hovering over rivers and preying on the smaller fish, as well as following the ploughman into the fields, to pick up insects. When they can find no other subsistence, they will feed on carrion. They are to be found in the

greatest abundance on our boldest rocky shores, where they find a retreat for their young, in the cavities with which those rocks abound. Like all birds of the rapacious kind, the gull lays but few eggs. It builds its nest, of long grass and sea weeds, on the ledges of rocks. The flesh of this species of birds is black and stringy, and generally of a fishy taste; but that of the gull is something better. Of these, the poor inhabitants make their scanty and wretched meals. Strangers to almost every other food, salted gull proves to them the greatest dainty. Thus we perceive that necessity can even create a comfort, by giving a relish to the coarsest diet.



TAME DUCK.

THIS is the most easily reared of all our domestic birds, the very instinct of the young leading them directly to their favourite element; nay, even when hatched by a hen, which sometimes happens, they seek the water, contrary to every admonition of the fosterparent.

Of the tame duck, there are no less than ten different varieties; but Brisson reckons upwards of twenty sorts of the wild duck. The principal distinction between the species is, that the tame duck has black, and the wild duck, yellow feet. The common species of tame duck take their origin from the mallard.

Ducks require very little charge in keeping, living chiefly on lost corn, snails, &c. for which reason they are very useful in gardens. When they sit, they require no attendance, except sprinkling a little barley, or refuse corn near them, which will prevent their straying.

Of the duck species, there are also the eider, wild, velvet, tufted, pin tail grey headed, white belled, Barbary, Madagascar and Bahama ducks.

Wild ducks are taken in decoys, and in such vast quantities, that upwards of £30,000 worth of wild ducks, wigeon and teal, have been sent up to London in one season, from the decoys in the neighbourhood of Wainfleet only.



A DESCRIPTIVE ACCOUNT

OF

VARIOUS SONG BIRDS:

WITH PRACTICAL INSTRUCTIONS FOR CHUSING, BREED-
ING, FEEDING AND TEACHING THEM TO SING.

 ABERDIVINE.

THIS bird resembles, in size and colour, the grey canary. The cock is distinguished by a black spot on his head, and a little black under the throat; the hen is greyer, with a spotted breast and belly. They are both familiar and easily taken.

Food.....They love white feed; but are mostly fed as linnets and goldfinches.



BLACKBIRD.

FOR the description of this bird, see page 105.

Food.....When young, feed them every two hours with fresh lean meet, minced very small and mixed

with bread, a little moistened. When older, they may be fed with any raw, or dressed meat, if not stale or sour. They should have water to wash and prune their feathers.



BULLFINCH.

THIS bird is in great estimation for its beautiful plumage, as well as singing, and also for its familiarity and tractability. It may be taught to pipe and talk, while perching on the finger, which renders it very engaging. To distinguish the cock from the hen, pull a few feathers from the breast, at about three weeks old, when those of the cock will be of a curious red, while those of the hen will be pale brown.

In order to teach this bird to pipe with propriety, a flagelet, or bird organ should be made use of, while they are in the nest, and unfledged; which, if properly attended to, they will retain a tune with the greatest exactness. Although the hen is not so beautiful in plumage as the cock, yet, with attention, she will very frequently pipe and talk equally well with the male.

Food.....When young, give them rapeseed, soaked in clear water for eight or ten hours, then scald, strain and bruise it, and mix it with an equal quantity of white bread, soaked in water, boiled with a little milk; it must be made fresh every day, to prevent its turning sour and spoiling the birds. When they can feed themselves, give them rape and canary seed, mixing most rape, as for linnets. If they droop, put a blade of saffron in their water.

CANARY BIRD.

THIS being the most estimable bird for its note, among those who delight in singing birds, although of foreign origin, we could not avoid inserting a short account of it.

It derives its name from the Canary Isles, its original native country. Of the several colours, those which have white tails are the least valued. The mottled birds are those which are chiefly brought into this country by the Germans. The cocks are of a lively yellowish colour, the hens of a dusky white.

To choose a good canary, observe that he stands bold, straight and upright upon his perch; let his looks be sprightly, full of life and vigour; let him look freely at you, while looking at him, without fluttering or beating himself.

Food.....Give him now and then, maw feed, in which he principally delights, and sometimes a bit of loaf sugar between the wires of his cage; in warm weather, a little seedy chick weed, or groundsel. The fine leaf of a young radish, heart of a cabbage, coss, Silesia lettuce, or endive, will serve to vary their food, which, being thus changed, will prevent his loss of appetite and sickness, caused by keeping him on the same diet.



CHAFFINCH.

THE cock chaffinch, at about ten or twelve days old, has much white in his wings and pinions, with a

reddish breast, and all his feathers higher and more brilliantly coloured, than those of the hen. An old cock has a blueish head, reddish brown back, mixed with green and ash colour, fine purple red breast, and a white belly. The breast of the hen is grey.

This bird is very docile and familiar, and may be taught, with attention, any tune ; if put in company with other birds it will imitate their notes. The cock will couple with the Canary bird.

Food.....Rape and Canary seed.



GOLDFINCH.

THIS bird, which is greatly admired for song and beauty, is the finest feathered of all cage birds, and so long lived, that Willoughby mentions one to have lived twentythree years. The cock is distinguished by a curious scarlet circle round the fore part of his head, or basis of the bill.

Food.....When young, give them white bread, soaked in clean water, to a very thick consistence. To this, add a little flour of Canary seed. They should be fed at least every two hours, but very sparingly, and with fresh food every day. In about a month, you may wean them gradually from this soft food, by laying some Canary seed beside, until they can be brought to live on it entirely.

GREENFINCH.

GREENFINCH, green linnet, or green bird, is of a hardy nature, and rather larger than the chaffinch. The head and back of the cock are green, edged with grey. The middle of the back inclining to chesnut. The fore part of the head, neck, breast, quite down the belly and rump, are of a yellow green.

Food.....The same as the chaffinch.



COMMON LINNET.

THIS bird is said to excel all the small English birds in singing. The note is curious; and he can imitate the song of any other bird. The cock has a browner back than the hen, and more white in its wings. When the wings are full grown, second, third, or fourth feather, is white up to the quill.

Food.....They should be fed with seed gathered from the land where they are taken, mixed with a little bruised hemp seed.—When caged, give them a small quantity of Canary, and a few corns of hemp. If drooping, a little lettuce seed, and a small piece of liquorice, or saffron put into their water. Chick weed is also a great restorative to the linnet.

NIGHTINGALE.

THE nightingale is reckoned the best of song birds. In grown birds, the cock is distinguished by its deeper and higher colours. In nestlings, when he has eaten, he gets upon the perch, and begins to tune to himself.

FOOD.....Give him, three times a week, two or three meal worms, or spiders, to purge him. When his fat declines, give him a little saffron in his water. Figs, chopped small among their meat, will recover their flesh when very thin.



RED POLE.

THIS bird is very prettily feathered; the head and breast of the cock being of a fine red, and much more brilliant than those of the hen. It is not much esteemed for its singing, although it has rather an agreeable note. Its nest never being found in England, denotes it to be a foreign bird.

FOOD.....The same as the linnét.



RED START.

THE cock is a very beautiful bird. The tail, rump and breast, are of a fine red. The back, neck and

hind part of the head, are of a lead colour. The throat and fore part of the head, are jet black, and it has a white mark on the pole. He is distinguished mostly from his black head. He doubles his notes very finely, and will sing in the night as well as the day.

Food.....The same as the nightingale.



ROBIN RED BREAST.

THIS bird, which is naturally solitary, will, when impelled by cold, become daring, familiar and sociable. The red on the breast of the cock is deeper, and extends farther upon the head than that of the hens. His legs are also darker, and he has generally a few hairs on each side of his bill.

Food.....The same as the woodlark, or nightingale, but be careful not to overcharge their stomachs. Never let them want fresh water, and once a week, put in it a blade of saffron.



SKY LARK.

AT about a month old, the cock may be known by his notes, which, though low, are distinctly al-

tered. In old birds, the cock is the lightest coloured, has a browner back, a yellower throat and breast, and a white belly.

Food.....Give them egg, bread and bruised hemp seed, with red sand at the bottom of the cage, and they will grow tame in two or three days. The nestlings should be fed, every two hours, with white bread and milk, mixed with one third part of rape seed, soaked, boiled and well bruised. A sheep's heart, or other fresh meat, minced small, is good for them; and, now and then, they should have a hard egg chopped very fine, an equal quantity of hemp seed bruised, and a little bread grated among it. Give them a turf of three leaved grass twice a week to perch upon.



SPARROW.

THE hedge sparrow may be tamed so as to fly about the house, without any apprehension of its straying. It will take the song of the best singing birds, if properly placed with them. The cock has a long, slender, dusky coloured bill. The upper side of his body is black, mixed with a dirty red, and the breast is black.

Food.....When taken, feed them, at twelve days old, with minced fresh meat and bread, or woodlark's meat. When brought up, give them hemp and Canary. If drooping, mix it with a little oatmeal.

STARLING.

HAVING described the starling in page 105 of this volume, we have only to observe that their food is the same as that of the blackbird, or woodlark.



THRUSH OR THROSTLE.

THE thrush has a great variety of note, and sings nine months in the year. The feathers of the cock differ from those of the hen, in beauty, sleekness and brilliancy.

FOOD.....When full grown, feed them with fresh meat, raw or dressed, with bread. This agrees best with them, though they may be brought to feed entirely on bread or hemp seed. They should have a fresh pan of water twice a week. When cramped, put fern or clean straw on the bottom of the cage, and feed them, as they lie, with nightingale's meat.



TITLARK.

THIS bird is handsomely shaped, and excelled by very few. It has no remarkable song, unless the cock is particularly excellent, when it will sing like

a Canary bird. The nestling cock has more yellow, especially under the throat, legs and soles of the feet, than the hen.



TOMTIT,

OTHERWISE Joe Bent, is a very pleasing bird, and has a pretty song.

Food.....They will thrive with bread and cheese, and, when grown up, with hemp seed. But they relish the woodlark's food the best.



TWITE.

THIS bird, which is supposed to be a native of Germany, visits England in winter. It is very brisk, and always singing. It is gentle, familiar and is hung among other birds, to provoke them to sing. The cock is known by a red spot on the rump.

Food.....Rape and Canary ; but they like the latter best.

WOODLARK.

THE woodlark is esteemed the best song bird in Great Britain. It sings nine months in the year. The cock is known by its size and song.

Food.....Hard egg, chopped and minced, with crumbs of bread, a little hemp and maw seed. One egg is enough for six larks. Give them sometimes minced meat, as other birds, but no turt in their cage.



WREN.

THIS is the smallest of song birds, being about four inches long, from the top of the bill to the end of the tail. It has, however, a very loud song. The cock has a dark brown back and head, with a white breast and bill; the tail and wings are of a bright yellow, variegated with dark lines.

Food.....The same as the nightingale; but, when sick, two or three flies, or spiders.

NATURAL HISTORY.

PART III.

INSECTS.

THEIR GENERAL NATURE.

DEFINITION.....Insects are small animals, breathing through vent holes, arranged along their sides, and provided with a skin, of a bony nature. Their body is composed of a head, trunk, limbs and abdomen.

FORM AND STRUCTURE....Not having occasion to fly far, they are not made so sharp before as birds : But their wings have sufficient strength and activity to conquer all the resistance they meet with, in their short passage through the air. Having neither bones, flesh nor skin, as in other animals, they are covered with a curious coat of mail, which both guards and strengthens the body, while it renders the insect more adapted to the purposes of seeking its food, and performing every other function of its being.

EYES AND ANTENNÆ.....The eyes of the fly tribes are two little crescents, or immoveable caps,

round the head of the insect; and contain a great number of minute eyes, crossing each other in the form of lattice work. Curious observers relate that they have counted several thousands in each combination. Lewenhoeck calculated as many as 8000. The cause of their eyes being so numerous, is to supply the defect of vision arising from their eyes being immoveable. Thus insects have eyes in every direction. How admirable must their sight be, which enables them to discern objects, with their innumerable quantity of eyes, with as little confusion as other animals do with two! Their antennæ are small horns, projecting from their head, in such a manner as to preserve the sight of so many fixed eyes from being injured.

MOTION.....The admirable mechanism in those that creep, the curious oars of those that swim, the incomparably formed feet of those that walk, the strength and elastic force of those that leap, and the talons of those that dig, afford the most ample matter for contemplating the endless wisdom of the Creator. Each is particularly adapted to the kind of motion peculiar to the respective insect; which is exemplified in the grasshopper, water beetles, crickets, &c. To render their progress through the air as easy as possible, insects are provided with wings, formed of the lightest membranes, and the finest articulations. To poise the body, some have four wings; while such as have only two, have pointals, or poises, under each wing.

PARTS.....Insects are composed of joints, muscles, tendons and nerves; with eyes, brain, stomach, entrails; and with every other part of an animal body. How is the mind absorbed in wonder, when it considers that the smallest animalcula, which the microscope can only render visible, is possessed of all the above related parts! May we not, therefore, say with Galen, when such exquisite workmanship appears in the minutest insect, what must be the wisdom employed by the Almighty in forming the more noble parts of the creation.

SAGACITY.... Whether by instinct, or actual sagacity, insects are secured against winter, our admiration is equally raised. When cold and wet oblige them to retire, some entomb themselves, as in their Aurelia, or chrysalis state; others provide themselves in summer with sufficient provisions for their winter subsistence; and some of the insect tribe exist in a sleeping state, without changing their nature, or being under the necessity of requiring that food which is denied them by the change of season. This caused Solomon most wisely to say, "Go to the ant, thou sluggard, consider her ways and be wise; which, having no guide, overseer, or ruler, provideth her meat in the summer, and gathereth her food in the harvest."

CARE OF THEIR YOUNG.... Insects, with the greatest care and affection, carry their young in their mouths, which is particularly observed in the ant tribe. But their care, in general, deserves the greatest admiration. They deposit their eggs in such places as secure, produce and subsist their offspring. According to the species, their eggs are laid in waters, on woods, or on vegetables, where the young find a subsistence agreeable to their nature. Particular woods, herbs and plants, are chosen by the parent insect to foster their future offspring. Thus nettles, ragwort, cabbage leaves, oak leaves, currant and gooseberry bushes, &c. have their peculiar insects. Some, whose eggs require more warmth, deposit them in the hair of animals, the feathers of birds and even in the scales of fishes. Others make their nests by perforating earth and wood, where they deposit their eggs with such neatness as to gratify the most curious observer. And, to prevent their eggs being injured, they inclose them in the leaves of vegetables, curiously glued together.

FOOD.... Every species of insect has a food peculiar to itself. Caterpillars, for instance, are not only limited to herbage, but, likewise, to a peculiar kind. Sooner than disobey this ordinance of nature, they will perish with hunger, unless they meet with a plant similar to that to which they are attached. To this

general rule, we admit there are some few exceptions in caterpillars that will subsist on any vegetable. This seems to be wisely regulated, in order to prevent the most useful parts of vegetation being destroyed by caterpillars feeding, for instance, on apple trees only.

USE.....Let no person consider the insect part of the creation, as only worthy to be crushed to death by the foot, or to be made the cruel sport of thoughtless childhood: For, in the words of the ingenious and immortal Shakespear,

“ The poor beetle, crush'd beneath the foot,
Feels a pang as great as when a monarch falls.”

Surely their weakness ought to be their surest protection against such treatment. But, when it is considered that we derive the greatest embellishments, and medicinal aids, from their virtue, self interest, if not gratitude, should protect their defenceless lives from being destroyed by man. To them we are indebted for our silk, honey, cochineal and several medicines that are indispensably necessary to preserve our lives from being the prey of maladies that might otherwise prove incurable. Added to this, caterpillars are indispensable food for birds, in their infancy, which have then their cries heard and relieved by the Creator, producing this subsistence, so admirably adapted to their tender texture. But sometimes it must be allowed, that the Almighty punishes the ingratitude of man, by sending hosts of flies, locusts and caterpillars, in array against him. This should teach us not to despise even a worm, which has been so frequently rendered one of our most powerful and dreadful enemies. Let us not think ourselves rich, great, or independent, while the Almighty can punish our presumption with so inconsiderable an instrument.

TOMBS.....The caterpillar, fatiated with verdure, retires voluntarily from life, and seeks the grave. Previous to their retreat, they change their skins, cease to feed, while they build themselves a tomb, or sepulchre. A few days conduct some of them into a

new state, of superior existence. Instead of crawling the earth, they wing the air. The intermediate state between the worm and the fly, and which is so striking a picture of dissolution, is called the chrysalis state. What appears the tomb of the worm, is the embryo of the butterfly; which, here acquiring a perfect form, bursts the barriers of the grave, and speeds its flight into another world of enjoyment. What a contrast of being is there between its last and former state! The caterpillar is terrestrial, and crawls heavily along the ground. The butterfly is agility itself, and seems almost to disdain reposing on the earth, from whence it derived its being. The first is shaggy, and of hideous aspect; the latter is arranged in the greatest splendor and beauty of glowing colours. The former was obliged to a gross food; but this imbibes the essence of flowers, regales on dews and honey; and perpetually varies its pleasure, in the full enjoyment of nature, which it most delightfully embellishes.

A collection of these beautiful and variegated insects is a splendid spectacle, where the richest and most diversified colours delight and astonish the eye with their shade and disposition. The sight alone enraptures. But, what a sublimity of reflexion they afford to the contemplator of nature! The period of the caterpillar's reptile existence being accomplished, it entombs itself, for the purpose of rising again a superior being. The chrysalis is, at once, the tomb of the caterpillar, and the cradle of the butterfly. Under a transparent veil, this miracle of nature is effected; from whence, like the sons of man rising from the tomb at the day of resurrection, the butterfly breaks the barrier of its grave, and wafts itself into the air of heaven. Here it enjoys the effulgence of light, and respires the breeze, embalmed with the sweets of nature. Successful in his rising every nectarious flower, his rest is the harbinger of enjoyment. His airy wings convey him from pleasure to pleasure, while they captivate man with their beauteous and variegated splendor. And in this revelling from essence to essence, he is not to be caught but by a small net of gauze, or silk, upon a wire, placed at the end of a light wooden handle.

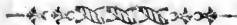
What a scene of wonders does not the butterfly display ! Its eyes of net work ; its wings besprinkled with a farinaceous dust, of which every grain is a tile laid over a very fine net of gauze ; and the infinite variety of form, colour, richness and beauty, of its embellishments, render it so wonderful, that the ladies of China are said to spend their whole lives in the study of this incomparable insect. They inclose, in a box filled with small sticks, a number of caterpillars, ready to spin their bag ; and when they hear the fluttering of the butterflies wings, they release them into a glazed apartment, filled with flowers.

In order to give our young readers as clear an idea of insects, in their worm and caterpillar state, as the limits of our plan will allow, we have selected six, as the most beautiful and curious we could find, in Dr. Lister's Latin Treatise on this part of animal nature.



AMERICAN EMPEROR.

THE ingenious Mr. Lister says, that after he had supplied this caterpillar with various kinds of herbs, which it was tired of eating, he has placed before it some nettles; supposing it might be pleased with a different kind of food. He saw, with great admiration, that the insect became so joyous as to seem, by its motion, to congratulate itself on such a repast being set before it. But, such was the avidity with which the nettles were eaten, that not any remained of them in a very short time. Having thus nourished itself for a few days, it began in October to prepare for transformation. Being then put under a glass, the insect affixed itself to the centre, and thus hung suspended. Having attained the state of transformation, it so strongly moved itself, and struck the glass with such force, as even to cause the vibration of the noise to last while forty was counted. On the 12th of December, the same author observes, that a perfect insect was produced, which was exceedingly beautiful, and resembled in variety of colours the Peacock. It lived forty days; in which time he says that he knew not any food on which it subsisted.



GREEN MARBLED BUTTERFLY.

WHEN the coleworts and cauliflowers begin to heart, the perfect insect of this caterpillar is chiefly found depositing her eggs upon the leaves. The heat of the sun soon vivifies the eggs, and brings forth the

said caterpillars, which immediately begin to consume the vegetables above mentioned. They bear the heat of the sun very easily ; but they cannot endure long rains and frequent showers ; for in such weather they waste so fast as, in a very short time, to have no more remaining of their being, but the skin. —This worm begins to purge itself and prepare for its transformation, about the 3d of August ; and on the seventeenth of the same month the butterfly is produced. This perfect insect is very inactive and slow in its motion. It however generally exists during the winter ; and sometimes it has been found alive when the spring has been far advanced.



YELLOW UNDER WINGED MOTH.

THIS kind of insect is of all the most difficult to be obtained. Lister sought in vain, a considerable time, to find in what place and manner it deposited the eggs. After many trials and enquiries, he placed one upon a leaf, which he had no sooner done, than it began to cover itself with a woolly substance, seemingly as a preservation against wet or cold. The leaf being in a little time opened, he found a green feed ; and he found that the insect fed on gooseberry leaves, or curling vines ; and also the leaves of white, black and red currants. It began about the end of June to prepare for its state of transformation, in which it remained until the 13th of July, when a butterfly, spotted with black and white, sprung forth, to enjoy its new state of perfect being. When touched, or suffered to fall, it remained so motionless as to appear entirely dead.

NUT TREE MOTH.

THIS worm, or caterpillar, delights in rose leaves ; but they are not so ravenous as others ; for they have long intervals between their meals. They seldom change their leaf until it is entirely consumed. Their colour is very elegant. The upper part of the body is of a beautiful yellow. But they are not so beautiful after, as before feeding ; for their skin is so thin as to be tinged by the colour of whatever food they eat. Before it disposes itself for transformation, the body assumes a red colour. This insect was found to commence its aurelian state about the beginning of June ; and on the 5th of December a perfect insect was brought forth.



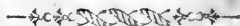
TIGER MOTH.

THESE caterpillars feed on the leaves of red roses and red gooseberry bushes. Some have their feet in the middle of their body, and others at the extremities. When they change place from one situation to another, they ascend by attaching themselves to the bough, with their feet, by which they rise to the body like a serpent, and thus gain their desired situation. They hold themselves so fast by their feet that they can scarcely be taken from the part to which they adhere. They prepare for transformation by cleaning their bodies ; which being done, they commence their chrysalid state about the first of April, and on the 24th of July the perfect insect is produced.

PHOBERAN.

THIS caterpillar is found near a village called Groed in Flanders. It is generally seen sitting on a branch of willow. It feeds on the leaves of the same tree. It eats very leisurely. The hinder part of the body resembles the beard, face and head of a goat. When you take it, it strikes as if in the greatest anger. It has two hooks on the back, with which it guards and preserves itself from the attacks of other creatures. It is therefore called by Lister, the phoberan. When it eats, the head appears tied to the body, with a slight thread or filament, not unlike the joining of the head and body of a spider.

On the first of September, it resigns itself to its approaching transformation. Twentytwo days after, appears a beautiful butterfly, distinguished for its beauty and variety of colours. Before the perfect insect, it deposits its eggs, which are coloured with different green hues.



SERICARIA.—SILKWORM.

WITHOUT entering into the description of a naturalist of this worm, we shall confine ourselves to that which we think will be more useful, pleasing and interesting. It being more an object of universal service, than of singular beauty, induces us to prefer giving an account of its utility, than any elaborate account of its figure, or colour.

Where these worms are bred, they no sooner leave the eggs than they are fed with mulberry leaves, with which they are supplied every morning, when the old leaves are carefully removed. This insect, when first produced, is extremely small, and entirely black. In a few days it assumes a new habit; which is white, tinged with the colour of its food. And before it goes into its chrysalid state, it assumes two other dresses. At this time, it appears disgusted with the world, and voluntarily retires to its solitary grave, which is most admirably formed with its thread. How wonderful must be the structure of its body, to furnish such a thread; and how astonishing the instinct which teaches it to make, of this selfproduced material, its own tomb! And how must it diminish the pride of man, to consider that he is indebted, for his most gaudy array, to a substance, of which a worm forms its sepulchre! Reflect on this, ye potentates of the earth; and acknowledge, with humble gratitude, your debt to the silkworm; and divest yourselves of the vain arrogance you assume, when arrayed in the robes of majesty!

When the chrysalid state begins, the insect proceeds to spin its silk, in which it is buried. Like the pierced iron plates of a wire drawer, this worm produces the thread through a pair of holes in an instrument placed under its mouth. Two drops of gum serve it as distaffs, supplying the substance of which she spins the thread; for the gum is no sooner in the air, than it loses its fluidity, and changes to the silk, in the due size of which the worm is never deceived. She always proportions her thread to the weight of her body. The cone of silk being formed, and opened, is found to consist of the worm, changed to a nymph, and buried in its centre, or down, or flue, which is the bad part of the silk, and the perfect part, all ranged with great compactness and propriety. It may be a matter of wonder how so small a moth as this little worm must necessarily produce, should be able to burst the million fold barriers of her place of regeneration.

The same omniscient being who taught it how to erect this place of rest, taught it, at the same time, to find an easy access to her aerial existence. The new animal, with its horns, head and feet, directs its ef-

forts to that end of the cone it has left purposely light enough to admit its passage to another world of enjoyment.

By calculation, one of these worms will produce between nine hundred and a thousand feet of silk at one spinning; and so thin and light in its texture, that the whole weighs no more than $2\frac{1}{2}$ grains. And as they were particularly formed to furnish mankind with a substance for dress, that might render us more agreeable to each other, and thus enhance the few pleasures of our existence, nature has caused one fly to lay as many as 500 eggs. How grateful, then we ought to be to the Creator, who thus forms, yearly, such an infinity of these manufacturers of the most agreeable and beautiful substance the world affords, for our array and embellishment! By this worm, grandeur is more enobled, and even royalty itself is rendered more majestic.



FIRST ORDER.

INSECTS WITH CRUSTACEOUS ELYTRA COVER-
ING THE WINGS.



GENUS I.

SCARABÆUS.—BEETLE.

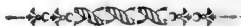
ALL insects having wings covered with the elytra, or cases of the wings, were usually called in Latin; Scarabæus; until Linnæus discriminated them, and confined the term to particular beetles, distinguished by the horns on their head, and thorax or breast.

SCARABÆUS AURATUS.—GOLDEN
BEETLE.

THE larva, or grub, of this insect, injures the roots of trees and plants. The beetle is found upon flowers, and particularly upon the rose and piony.

The whole is a burnished green, and tinged with red, so as to resemble the finest polished copper. The elytra are adorned with a few transversal spots, which add to the other embellishments of its brilliant colouring. Such is its amazing splendor, that it rivals the emerald, and is, therefore, admired as the most beautiful insect produced in England.

We avoid describing the cockchafer, which, being so well known, only requires us just to mention, that all its varieties depend on its mode of life; and its colours, on its sex, age, health, sickness, &c.



GENUS II.

LUCANUS.—STAG BEETLE.

THE stag beetle is the largest, and most singular in its shape, of any in this country. It is known by two maxillæ, projecting from its head, and resembling the horns of a stag. These maxillæ are furnished with teeth, from their root to their point. The elytra have neither streaks or spots. The whole insect is of a deep brown. It is sometimes found in oaks, near London, where it is much smaller than those of the same species found in woody countries. As their horns pinch severely, they are carefully to be avoided. The greatest beauty they possess is their maxillæ, or jaws, sometimes appearing like coral.

The lucani feed on the oozings from oaks, where the females deposit their eggs. The larvæ, or grubs, lodge under the bark, or in the hollow of old trees; which they bite, and reduce to fine powder. Here they transform themselves into chrysalids.

The use of their porrected maxillæ, or jaws, is to loosen the bark to which they affix themselves, while they suck the juices oozing from the tree.

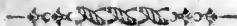


GENUS III.

DERMESTIDES.

CHARACTERISTICS.

THE antennæ, or horns, end in a head of an oval form; the thorax, or breast, is of a convex form; and the head is so bent as to lie almost concealed under the thorax.



DERMESTIS VIOLACEUS.—VIOLET BEETLE.

THIS insect is exceedingly beautiful, and is much smaller than, though nearly resembling, the stag beetle. The elytra are of a deep violet; the thorax, or breast, is covered with green hairs, and the legs are black. The whole creature, glittering with its brilliancy, charms its observer. The larva and the perfect insect being found in dead bodies, evince that

the Creator has power to produce the most beautiful effects from the most disagreeable of mediums. How different is this from human ability ! With the choicest of nature's productions combined to almost infinity, man is not able to imitate the splendor of this insect, which is produced by the Almighty, from a dead and putrid body.



GENUS VII.

BYRRHUS SCHROPHULARIÆ.—NET- TLE BEETLE.

THIS insect is found mostly in flowers.—Its oval body is black, except where the under part of the abdomen appears white, from the multitude of minute scales with which this part is covered. The elytra not only inclose the wings, but the sides and under part of the body. These elytra are black, with white and red scales, resembling embroidery. This species is found in gardens. If rubbed, the small scale falls, and cause the insect to appear entirely black.



GENUS X.

COCCINELLA.

THIS genus comprehends those small beetles which have red and yellow grounds, spotted with black; and are known even by children, who call them lady birds.

Of all the different larvæ of the coccinella, the most curious is that which, from its tufts of hair and singularity of figure, Mr. Reaumur calls the white hedgehog. It feeds on the leaves of trees; and having existed a fortnight in its vermicular state, it turns to a chryfallis, without divesting itself of its fur; and, three weeks after, it takes flight from its tomb, as a perfect coccinella. When first produced, the colours of the elytra are nearly white; but, in a little time, they change to that lively brilliancy for which they are so justly admired. Their eggs are oblong, and of an amber colour. This beautiful little insect is frequently found on thistles.



GENUS XI.

CHRYSOMELA.

CHARACTER.

THE chrysomelæ have their antennæ, or feelers, shaped like bead necklaces. This genus contains a

great variety of beautiful insects, differing in size, colour and abode. They are found almost every where, in woods, gardens, &c. When caught, they emit a disagreeable smelling liquor.



CHRYSOMELA GRAMINIS.—GRASS

CHRYSOMELA.

THIS beautiful insect, like most of the genus, has an oval and very convex form. The colour is a fine glossy green, somewhat tinged with blue; which affords a most charming reflect. The eyes are yellow, and the thorax and elytra are spotted. It is found in the meadows, in May and June, upon water betony, dead nettle, mint and other labiated plants. By some it is called the blue green chrysomela.

The glittering colours with which several species of this genus are embellished, displaying the splendor of gold and copper, have conferred on them the pompous name of chrysomela. The larvæ prey upon the substances of leaves, without touching the fibres. The leaping chrysomela infest the tender leaves of plants; which should be carefully guarded from their depredations.



GENUS XII.

THE antennæ grow gradually larger from each extremity to the middle, and are situated between the eyes. The breast and wing cases, are covered. Protuberant spines.

*HISPA ATRA.*—BLACK HISPA.

THIS pretty, singular insect, is of a deep polished black. The upper part of his body is clothed entirely with long and strong bristles, like the shell of a chestnut, or rather in the manner of a hedgehog. The case of the horns has even a thorn at its end, to guard the insect from injury. The breast has a row set transversely, which are forked. And the elytra, or wing cases, are covered with a great number that are single. The points of all are firm and piercing. This insect was found by Barbut, in the month of July, at the root of some long grass, in a field near Paddington. This flying hedgehog, if we may be allowed the term, is difficult to be taken. It bears its antennæ erect before it, as guardians of its progress through the aerial element.



GENUS XVI.

CERAMBYX MOSCHATUS.—NUTMEG*CERAMBYX*.

THE body of this insect is entirely green, tinged with blue and gold colour, which renders it most delightfully resplendent. It is sometimes found composed entirely of blue and gold. The elytra are long, soft and flexible, and finely shagreened. This beautiful creature is found upon the willow, which it perfumes with an odour like that of a rose, so as to scent a whole meadow.—Thus, we perceive, that nature bestows on this insect the most grateful odour, to supply the want of those delightful scents of which meadows are deprived by the field flowers being shorn by the scythe of the mower; for it is observed, this charming *cerambyx* is produced in its perfect state about the general time of making hay. What care does providence take to accommodate man with a never ceasing variety of delights, adapted to charm every sense!



GENUS XVII.

LEPTURA.

CHARACTER.

THEIR antennæ are setaceous or bristly; the elytra diminish in breadth towards the extremity; and the thorax is round and slender.

LEPTURA ARCUATA.—RAINBOW*LEPTURA*,

VARIES in respect to size, and is of a deep black ground, resembling velvet. The antennæ are of a bright yellow, and nearly as long as the body. The elytra are adorned with high flame coloured cross bars, which are formed by a down of a most refulgent golden yellow. Viewed through the microscope, it appears like velvet inlaid with topazes; and, when assisted with the solar rays, nothing can excel its infinity of splendor. This most wonderful insect for beauty is the poor tenant of a decayed tree, on which it may be frequently found, especially on an alder.

The larvæ are found with those of the preceeding genus, which they greatly resemble in appearance and mode of existence.

*CASSIDA*.—SHIELD BEETLE.

THIS genus, which Barbut ranks under the ninth class, is thus named, from concealing its head under the margins of the thorax, as if it were defended with a helmet. Many of this species are found in foreign countries. Their larvæ form for themselves a kind of umbrella, which shelters them from the sun and rain. These insects inhabit thistles and knotty plants. One species of them produce a chrysalis, resembling an armorial escutcheon. This brings forth that singular cassida, which is so distinguished for its variegated beauties. Many are found upon the wild elecampane, growing on the side of ponds.

GENUS XIX.

LAMPYRIS.

CHARACTER.

THESE insects are chiefly distinguished by their emitting a light in the dark; and are, therefore, called fire flies. The females are apterous, or without wings.



LAMPYRIS NOCTILUCA.—GLOW-
WORM.

CONTRARY to the general order of nature, the male of this insect is less than the female. But the greatest difference between the sexes is, the male being covered with brown elytra, shagreened and marked with two lines longitudinally. The two last rings of the abdomen are not so bright as those of the female, but they have four luminous points.

The glowworm, which is frequently seen in woods and meadows at night in June, is the female. The shining light it emits directs the male to his tender partner, which, not being able to fly, is thus most wonderfully provided by providence with a self-possessing ray, in the sun's absence, to shew its mate the spot where it is anxiously waiting its company. Thus

are the banks and hedges adorned with their little illuminations, while the nightly traveller is charmed with their beauteous splendor.

Their luminous power depends on a liquor placed at the lower extremity of the insect, which by suction renders it more shining, or by dilating or contracting itself withdraws or emits it at pleasure. That the light is caused by a species of phosphorus, is evident, from the animal, when crushed, leaving upon the hand a luminous matter, which continues its lustre until it is dried.

The perfect insect flies in autumn evenings, and frequents plantations of juniper trees.



FIRE FLY OF THE EAST INDIES.

THIS fly is about an inch long, and an inch broad. Their head is brown, and has two small horns of feelers. They have four wings. On their backs, they have a black bag, containing a luminous substance, which is concealed by their wings, unless expanded during their flight. In rainy seasons, they swarm among trees, and feed upon their blossoms. Of these flies, there are several species in the East Indies. Being destined, seemingly, to roam by night, in order to avoid the excessive heat of the sun by day in those sultry climates, how providentially nature has accommodated them with a substance that renders their aerial course perceptible to each other! But when they alight, and swarm upon trees, their luminous substance, being no longer useful, is concealed and preserved by their closed wings.

LAMPYRIS NOCTILUCA OF MARTINI.
CO.—FIRE FLY OF MARTINICO.

THIS fly, according to the Pere de Terte, is less than the common fly. They emit a sparkling golden light, which is extremely agreeable. But the insect withdraws and lets it shine at intervals, alternately, throughout the night. This effulgence is contained in a whitish substance, of which the insect is so full, as to make it appear through the crevices of its skin at its pleasure.

These different fire flies seem destined by nature not only to cheer the bosom of darksome night, but to guide the wandering savage through the pathless wood, or desert wild. Indeed by their light, he may lay more secret snares for his shaggy prey on the mountain, or his finny prey in the deep, than he could by the presence of the sun.—Thus, being deprived of that artificial light which he can only possess from civilization, nature has fortunately created these admirable insects for his convenience.



GENUS XX.

CANTHARIS.

CHARACTER.

THEIR horns or feelers are bristly; their breast is margined; and their elytra, or wing cases, are

flexible. They are commonly called Spanish flies; but this is erroneous, as they are a distinct genus from the cantharides.

CANTHARIS LIVIDA.—LEAD COLOURED CANTHARIS.

THIS insect varies in the colour of the elytra; but this difference only arises from the difference of sex. Their horns are all black, except the articulation near the base, which are yellow. They have black eyes; and the head, in both sexes, is a yellowish red. The wing cases are silky, flexible and appear as if strewed with silver dust, when viewed by a magnifying glass. The abdomen, or belly of this fly, is black; except the last rings, which are yellow. It is found upon a flower.



CANTHARIS PECTINICOMIS.—COMB HORNED CANTHARIS.

THE antennæ, or feelers of this fly, are black, combed and as long as the body. The breast and elytra are of a beautiful scarlet. It has black legs and yellow eyes. It is a pretty insect, and is found among flowers.

This genus contains a number of beautiful insects, the colours of which vary according to the difference of sex, season, &c. which renders it unnecessary to describe them.—They frequent flowers; and their larvæ are similar to those of the cerambyces, and are to be found in the trunks of decayed willows and other old trees. Although these insects are frequently confounded with the cantharides, yet they differ essentially: For the canthares have five articulations in the tarsi, or intermediate part between the leg and foot; but the cantharides have five articulations, or joints only, on the two first pair of legs, and four only to the tarsi of the last pair.



GENUS XXI.

SKIPPER.

CHARACTER.

THEIR horns are bristly; and they have an elastic spring, or spine, which projects from the hinder extremity of the breast.



ELATER SANGUINEUS.—BLOOD COLOURED SKIPPER.

THE breast of this insect ends, underneath, in a long point, or spine, which enters, as if with a spring, into a cavity in the upper part of the under side of the thorax. By this admirable construction, the skipper is enabled, when upon its back, to leap in the air, and, thus, alight on its feet. It varies in size; and, when young, the elytra are of a beautiful red; but in a few days they lose this splendid hue, which is then changed to polished black; and, when viewed through a microscope, to nearly a chesnut colour. The breast is glittering, and appears with dark down, interspersed with some black hairs. The female is black, and marked with spots of a deeper die, occasioned by a velvet down, lying in tufts, which are only to be distinguished by the glass.

The larvæ are found in the trunks of decayed trees, where they are transformed into perfect insects, which flutter upon flowers, wander over fields, and conceal themselves in thickets, or under the bark of trees.



GENUS XXII.

CICINDELA.

CHARACTER.

THE horns are bristly; the jaws porrected and armed with teeth; the eyes are prominent; and the breast is rather round and margined.

CICINDELA CAMPESTRIS.—FIELD SPARKLER.

THE field sparkler is one of our most beautiful insects. The upper part of its body is rough, and of a fine green, tinged with blue. The under side, legs and horns, are of a shot colour, gold and a red, inclining to the copper hue. The eyes, being prominent, give the head a broad appearance. The breast is pointed, and narrower than the head; which characterizes the cicindela. Like the head, the breast is rough; and of a green colour, tinged with gold. The elytra are delicately and irregularly dotted, with six white spots on each. This insect runs with great swiftness, and flies with facility. At the beginning of spring, it is found in dry, sandy places, where its larvæ also inhabit. These are a long, soft, whitish worm, with six legs, and a scaly head. They make a perpendicular hole in the ground, at the entrance of which they keep their head, to catch other insects which fall in it. A spot of ground is sometimes entirely perforated in this manner.

The perfect insects of this genus are mostly so very beautiful, as to merit the attention of the curious in microscopic observations, as well as in natural researches; for some are minute, though not inferior in splendor to the larger; which renders them proper objects for the delightful amusement of the magnifying glass. And here it may be proper to observe, that living objects are always to be preferred to those which are dead, by the enquirer into the produce of nature. The perfect insects of this genus are, like their larvæ, perfect tigers in their disposition for prey, which they attack and destroy, with every effort in their power.

BUPRESTES GUTTALA.—SPOTTED BUPRESTES.

THE whole body of this insect is of a green and gold colour, with a blue tinge underneath. But it is chiefly distinguished by four white concave spots upon the elytra. The entire upper part of this insect appears most beautifully dotted, when seen through a microscope.

The larva is supposed not to have been yet discovered: But from the similarity of the perfect insect with the elater, and both being found among timber and decayed trees, the larva and metamorphosis may be imagined to correspond.



CACABUS GRANULATUS.—GRAINED BULL HEAD.

THIS species is not only one of the largest, but the most beautiful and brilliant this country produces. The head, breast and wing cases are of a coppery green. The elytra have three longitudinal rows of oblong raised spots. All the under part of the insect is black. But having no wings beneath the elytra, nature has providentially supplied it with such legs as enable it to run with amazing swiftness. This insect is frequently found in damp places, under stones and heaps of decayed plants in gardens. The colour sometimes varies; for it is frequently found coloured with a beautiful purple.

The larvæ live under ground, or in decayed wood, where they remain until metamorphosed to their perfect state, when they proceed to devour the larvæ of other insects, and all weaker animals they can conquer.

They are frequently known by the name of the ground beetle. Some are found so early as the beginning of March, in paths, &c. where the sun warms the earth with his vivifying beams. Many of the larger species have been found between the decayed bark and wood of willow trees.



GENUS XXVII.

MELOE.

CHARACTER.

THE horns resemble necklaces; the breast is rather round; and the elytra are soft and pliant.



MELOE VESICATORIUS, or *CANTHARIDES*.—SPANISH FLY.

THERE are several species of this insect, differing in size, figure and colour. But all are apparessed, by

nature, with great lustre. Green, azure and gold colours blend their hues to embellish them. They are mostly natives of the southern parts of Europe. The species used medicinally is nine or ten lines in length, of a shining green colour mixed with azure, and very prolific. These insects are sometimes observed to fly in swarms. A disagreeable smell, like that of mice, indicates their approach. By this scent they are found by the gatherers, who collect them for the apothecaries. When dried, fifty of them scarcely weigh a drachm. Shrubs, and particularly the leaves of ash tree, are their food. So corrosive are the odorous particles emitted by this insect, that great caution is required in taking them.—For many have been known to have suffered greatly, by only having gathered a quantity of them with their bare hands in the heat of the sun: Some have been oppressed with sleep, by sitting under trees on which swarms of cantharides have settled. Contrary to the general custom of nature, the female courts the male. The larvæ are produced from the ground, where the eggs are always deposited. These insects, reduced to powder, are exceedingly efficacious as blisters, in absorbing or drawing off humors which threaten the essential parts of life. But the cantharides is, notwithstanding, a most formidable poison, if taken internally without the greatest caution. Some who have been afflicted by their incautious use of them, have found the best antidotes to be milk, olives, camphire and oil of sweet almonds.

The larvæ of the meloes inhabiting this country, greatly resemble the perfect insects; for they are of the same colour, are as large, and are as slow in their motion. They are generally found buried deep in the earth, where they metamorphose themselves into perfect cantharides.

We have introduced the meloe vesicatorius, which is generally known by cantharides or Spanish fly to shew in what it is different from a preceding genus, called the cantharis, for which it is frequently mistaken.

CURCULIO, OR WEEVEL.

THIS insect feeds upon corn, the inside of which it eats, and leaves the bran. In this tribe, nature dispenses the riches of her most refulgent colours, so as to dazzle the eye with splendor. But it is the microscope that must admit us to this scene of superlative beauty.

The *curculio regalis* found in Peru is a wonderful instance of the beauty nature can bestow on even what is generally deemed the most inconsiderable of her products.

The larvæ, resembling oblong, soft worms, are greatly dreaded for the injury they do in granaries. Corn lofts are frequently laid waste by their ravages. The insect, having remained within the grain until it has devoured the meal, lies concealed under the empty husk, until it passes its aurelian state, and takes its flight as a *curculio*. While one species feed on corn, others destroy, in the same manner, beans, peas and lentils. To discover the grain infested by the larvæ, it is thrown into water, when that part which swims is certainly perforated by the *curculiones*. The heads of artichokes and thistles are often destroyed by these destructive insects. This animal being so delightful in appearance, and so destructive in its nature, is a lesson which teaches that beauty may effect our ruin while it captivates our senses.



GENUS XXX.

FORFICULA.

CHARACTER.

THE horns are bristly; the wing cases are half the length of the wings, which, being folded, are, notwithstanding, covered by the elytra; and the tail is forked.

FORFICULA AURICULARIO.—EAR.

WIG.

THIS species is entirely of a deer colour. The horns are prettily intermingled and variegated. The wings are of the same colour as their elytra, or cases. This insect is found in wet sand; near pools and rivulets; and particularly on grape vines. It is generally known, and dreaded by many for its tendency to creep into the human ear. That it has this habit, the editor of this volume can affirm from experience: But, that persons need be alarmed lest it should, thus, reach the brain, and cause death, he denies; for the least acquaintance with the anatomy of the head, will evince the impossibility of the insect reaching the inner part of the cranium by the avenue of the ear, from there being no communicate passage from one

to the other. The forceps with which nature has provided its tail, for defence, is capable of biting, so as to cause, for the moment, rather a painful sensation. Although furnished with this defence, the earwig has been observed not to use it, even when he has been surrounded with a swarm of ants. But it will frequently pinch the finger of persons attempting to take them with their hands.

The larvæ differs very inconsiderably from the perfect insect.



SECOND ORDER.

GENUS II.

MANTIS.

CHARACTER OF THE GENUS.

THE head is unsteady, and has a nodding motion. The mouth is armed with porrected jaws ; and the antennæ, or feelers, are brittle. They have four wings, which are membranous, and wrap round the whole body. The first pair of feet have teeth like a saw : And the breast is narrow, and extends to a considerable length.

MANTIS GANGYLODES.—WALKING
LEAF.

THIS insect is remarkably shaped. The head is joined to the body by a neck longer than the body itself. It has two polished eyes, and two short feelers. The breast is long, narrow and margined. The elytra, which cover two thirds of the body of the insect,

are veined and reticulated, or netted. The wings are veined, and transparent. The hinder legs are very long, the next shorter; and the foremost pair of thighs are terminated with spines. The rest have membranous lobes, which serve as wings to them in their flight. The insect might, therefore, be justly called the Mercury of this part of the creation. The top of the head is membranous, shaped like an owl, and divided at its extremity. This animal is one of the innumerable instances which nature affords, to indicate the infinite wisdom of the Creator. Whenever any part of his workmanship is found to deviate from the general system, it is still formed to answer the design of its existence. This insect, having such long legs, could never have sustained itself in the air, had not providence bestowed on it a species of wings, to balance its weight. These are the instances with which nature teems; and which would make the atheist tremble, had he but sense to contemplate the admirable design, system and application, with which they are characterized, as

———— parts of one stupendous whole;
Whose body NATURE is, and God the soul.

This genus is generally of a very beautiful green; but the colour soon fades, and becomes that of dead leaves; which has caused the inhabitants of China, where they are found, to call them by the name of walking leaves.

The larvæ very much resemble the perfect insect: But it is seldom seen in this country.



GENUS III.

CHARACTER.

THE head is bent inwards, armed with jaws, and furnished with palpe, or spiral tongues. The wings are so deflected as to wrap round the sides of the body. All the feet are armed with two crotchets, or nails; and the hinder are formed for leaping.

TETTIGONIA.—GRASSHOPPER.

THIS insect walks heavily, flies tolerably, and leaps with wonderful agility. It has an instrument in its tail, with which it digs holes on the ground, for the reception of its eggs. The grasshopper lays a great number at one sitting, of which they form a groupe, by uniting them with a thin membrane.—The little larvæ resemble entire the perfect insect, except in the size, and having neither wings nor elytra. These, as well as the perfect insect, are frequently found in meadows. They both feed on herbs very voraciously. The grasshopper, having many stomachs, has caused several authors to assert that they chew the cud, like some other larger animals.

GRYLLUS.—CRICKET.

THIS family of insects is called in England, crickets, from the sound, or noise they make. Towards sun set they leave their subterraneous habitations, when they make the fields resound with their chirpings. The domestic grillæ abide in ovens, and hearths on which wood is burnt : Here they frequently are troublesome, by their perpetual noise, and crawling about persons sitting near the fire. But a popular prejudice, in many parts of England, prevents their being driven away, or destroyed : For poor peasants, and common people, imagine they bring good fortune to whatever house they attach themselves.—So true it is, that the most absurd chimeras enter the minds of the ignorant, who are always prone to superstitious errors.

This insect is chiefly distinguished by having at its hinder extremity two bristles.

The domestic and the field cricket are the same species ; all the difference is, that the former more inclines to a yellow, and the latter to a brown hue.



GENUS IV.

FULGORA.

CHARACTER.

THE front of the head is empty, and extended. The horns, which have two articulations, are scaled below the eyes.

FULGORA CANDELARIA.—LANTERN FLY.

THE head and breast of this insect are generally the colour of a muddy brown; the elytra are of a lively green, spotted with a pale yellow; the wings are of a beautiful yellow, and have their extremities bordered with a glossy black. When the insect flies, the waving of the elytra causes the transparent spots to appear in the night like radiant flashes, forming various figures, according to the fancy of the wondering beholder. This fly is a native of China.



ANOTHER LANTERN FLY.

THIS lantern fly is a nocturnal insect, that has a hood, or bladder, on its head, which appears like a lantern, in the night: But by day it is clear and transparent, and very curiously adorned with red and green stripes. Such a shining light issues from this part of the insect, that it is possible to read by it. The wings and whole body are elegantly adorned with a mixture of red, green, yellow and other splendid colours. The creature contracts or dilates the hood, or bladder, as it pleases. When taken, they withdraw their light; but when at liberty, they suffer it to shine again, with all its wonderful resplendency.

These flies are as luminous as a lighted torch, while they reflect a lustre on all neighbouring objects.

They are in continual motion during the night ; but the motion is various, and uncertain : Sometimes they rise, and then sink. They will frequently disappear, and the next instant rise in another place. They commonly hover about six feet from the ground. It is said, there is not a night in the year in which they are not seen. In the coldest winter they are more frequently observed, than in the warmest summer. Neither rain or snow hinders their appearance. From all these circumstances many suppose it to be the *ignis fatuus*, or the jack-in-the-lantern ; which many have contended, is an inflammatory meteor, exhaled from marshy lands, over which it is observed to wander in the darkest night.



GENUS V.

CICADA.

CHARACTER.

THE head bends downwards ; the feelers are bristly ; the four wings are membranous ; and the feet are adapted to leaping.



CICADA SPUMERIA.—FOAMY FROG HOPPER.

AMONGST the species found in this country, of this genus, this is one of the largest. It is a brown, tinged with green. The head, breast and elytra, are beautifully dotted; on the last are two white spots. Before the insect has metamorphosed itself, the larva which produces it, lives and resides upon plants: But it is not perceived, unless the spot of its devouring is certainly known; for by emitting, from every part of its body, foamy bubbles, resembling spittle, under which it conceals itself, the larvæ is not easily discovered: But when this froth is removed, the larvæ is found: But it is soon covered again, by a fresh emission of froth. Thus the larvæ is enabled by nature to preserve itself against the injury of the weather, and from being destroyed by other insects. This is another instance of the variety of means adopted by the creator to preserve the ballance of all things. As the larvæ of this insect is liable to be preyed upon by different animals, it is provided with the power of emitting this foam, as the only protection against its enemies.



CICADA SANGUINOLENTA.—CRIM- SON FROG HOPPER.

THIS is thought the finest species which we, in this country, possess of this genus. The elytra alone have

six large beautiful crimson spots ; both the elytra are black at the extremity ; and the wings are a dusky colour, and tinged with a little red at their base. This insect, not leaping much, is easily taken ; but not near London ; as it is very seldom found near the metropolis. It varies according to the different size of the crimson spots observed on its elytra, or wing cases.



GENUS XI.

COCCUS.

CHARACTER.

THE trunk is placed in the breast ; the hinder part of the abdomen is bristly. The males have two erect wings ; while the females are apterous, or without any.



COCCUS PHALARIDIS.—COCHINEAL FLY.

THE feet and body of this insect are nearly of a pink colour, and sprinkled with a little white powder. The wings and four threads of its tail, are of the clearest white. It is found on a species of grass called phalaris. The female forms, on the stock of this

dog grass, a white downy nest, in which she deposits her eggs. Being brought over with exotic or foreign plants, they are sometimes found in hot houses. This species of gall insect is used in dying scarlet. When the dried cochineal is steeped in water, or vinegar, the parts of the body unfold themselves; and become so visible, as to display even the ligaments of the legs.

The Indians in Mexico, where the propagation of the cochineal is a considerable concern, gather them, and put ten or twelve in moss, or the flue of the cocoa: They are then hung upon the thorns of the Indian fig tree, which grows in great quantities round their habitations. They are so prolific as to afford three gatherings of them every year. As soon as they are collected, they are destroyed. Some they kill by the heat of ovens; and others by throwing them into hot water: While many are destroyed upon the hot places used for roasting maize.—Three pounds of fresh cochineal weighs but one pound when dried. Cochineal will preserve, for ages, its colouring particles. This valuable insect is used for dying scarlet and crimson. The Indians mix it with gum lac, to dye their cloths. The cochineal furnishes painters with many beautiful and splendid tints. It is computed, that 880,000 lb. of these insects is imported yearly into the kingdom of Great Britain. Were it propagated in the American islands, where the climate is congenial with this insect, great advantages might be derived: And as the cochineals of Europe resemble greatly those of America, they might, probably, be productive of emolument.



THIRD ORDER.

INSECTA LEPIDOPTERA.

LEPIDOPTEROUS insects have four wings, covered with scales. The mouth has a spiral tongue, which they unfold at pleasure. Their bodies are hairy.

This order is divided into three genera.



GENUS I.

PAPILIO.

THE horns are thickest at their extremities; and are in most terminated by a kind of capitulum, or little head. When sitting, the wings are erected, and touch each other.



GENUS II.

SPINX.

CHARACTER.

THE horns are thickest in the middle ; resembling in form, a prism. The wings are bent inwards. They are slow and heavy in their flights, which they take either late in the evening, or early in the morning.

GENUS III.

PHALENA.

CHARACTER.

THE horns are bristly, decreasing in size from the base to the point ; which chiefly distinguishes it from the butterfly. The wings, when at rest, generally turn down. They fly in the night.

For a more particular description of butterflies and moths, see our account, from page 139 to 146.



FOURTH ORDER.

INSECTA NEUROPTERA.

NEUROPTEROUS insects have four transparent, membranous and uncased wings, which are veined like net work. Their tail is unarmed, or stingless : But it is frequently furnished with appendices, like pincers, by which the males are distinguished.

*LIBELLULA*.—DAMSEL.

THIS genus of insects is well known to every body. The largest species is produced from a water worm, that has six feet, which yet young, and very small, is transformed into a chrysalis, that has its dwelling in the water. People have thought they discovered them to have gills like fishes. It wears a mask, as perfectly formed as those that are worn at a masquerade ; and this mask, fastened to the insect's neck, and which it moves at will, serves it to hold its prey, while it devours it. The period of transformation being come, the chrysalis makes to the water side, undertakes a voyage, in search of a convenient place ; fixes on a plant, or sticks fast to a bit of dry wood. Its skin, grown parched, splits at the upper part of the thorax. The winged insect issues forth gradually throws off its slough, expands its wings, flutters, and then flies off with gracefulness and ease. The elegance of its slender shape, the richness of its

colours, the delicacy and resplendent texture of its wings, afford infinite delight to the beholder.

In order to accomplish the purpose of nature, the male, while hovering about, watches, and then seizes the female by the head, with the pincers with which the extremity of its tail is armed. The ravisher travels thus through the air, till the female yields to his superior strength. These flies are seen thus coupled in the air, exhibiting the form of a ring. The female deposits her eggs in the water, from whence spring water worms, which afterwards undergo the same transformations.



LIBELLULA GRANDIS.——GREAT DAMSEL.

THIS species is the largest of any this country affords. Its head is yellow, especially forwards; its eyes are brown, and being very large, meet on the top of the head, and are often set with dots, raised and shining, which would constitute a very distinctive character, if it were constant; but sometimes those dots are absent, or there are, at most, but one or two. The thorax is dun coloured, with two oblique bands on each side, of a lemon colour. The abdomen, which is very long, is likewise of a deep buff, often spotted with white on the top and bottom of each segment. The small luminæ that terminate the abdomen are very long in the species. The wings have more or less of the yellow die, with a brown spot on the exterior edge. At the rise of each wing there is a small protuberance, of a dark brown colour.

LIBELLULA VIRGO.—VIRGIN.

THIS beautiful libellula has a large head, reticulated, prominent, brown eyes, that are not in contact with each other. The space intervening between the eyes, exhibits the three brown stemmata, placed in a triangle. The neck, on which the head is rested, is short and narrow. The thorax is larger, of a bright green and blue colour. From the inferior part of the thorax arise the six legs, long, and charged with a double row of small spines, a circumstance common to this genus. From the upper part come forth the four wings, all of equal size. They are much reticulated, and have on their middle a large cloud, of a blueish brown, that occupies above one half of them. The base and extremity of the wings are, the only parts not charged with the same colour, being only of a yellowish hue. On the outer edge of the wing there is no spot; which is uncommon in this genus. The abdomen, long, cylindric, and consisting of nine of ten segments, is of a blue colour, sometimes bordering on green, and very bright. This beautiful insect is met with in meadows, on the banks of ponds.

*LIBELLULA PUELLA.*

THE wings of this insect are whitish, nicely veined with black, with a black spot on the exterior edge towards the extremity. The colour of the head is a leaden blue, with brown eyes. The thorax, which is blue, is adorned with three brown longitudinal

bands, one on the middle, and two narrower ones on the sides. The segments of the abdomen are blue, with a black ring towards their posterior extremity. They are nine in number; the two last larger than the rest and entirely brown. This insect is found in meadows.

The remaining libellula is only a variety in colour, the body being of a fine red.



GENUS II.

EPHEMERA.

CHARACTER.

THE mouth has neither teeth nor spiral tongue. The wings are erect, and the hinder shortest. The tail is furnished with hairs, or bristles. The horns are short and bristly.



EPHEMERA.—DAY FLY.

THESE flies derive their name from the short period of their existence. Some of their different species live several days; while others, that take their

first flight at the sun, die before that luminary rises again. Some have only the life of an hour; others exist but half an hour.

The ephemera, before they fly, have been in some manner fishes: And, what is very remarkable, they have been observed to remain as long as one, two and three years, in their larva and chrysalid states. Both the larva and chrysalis have small fringes of hair on each side; which, when moved in the water, serve them as fins. The plying of these little oars is exceedingly curious. The larva make their residence by perforating, or making holes in the banks of rivers; and, when the water falls, or decreases, they make other holes lower, in order to have ready access to their favourite element. Flames attract them, so as to cause them to form a thousand circles round such a light, with an amazing regularity. One single female will lay seven or eight eggs, which sink to the bottom of the water, where they are deposited. The larva which they produce construct habitations to shelter them from every danger. The flies having propagated, immediately die in heaps.—Fishermen consider these multitudes of destroyed insects, as manna for the fish. We can, therefore, perceive, that even this insect, which cannot, for its very short existence, be of much service during life, is, by the wisdom of the Creator, so calculated, as to be of essential service, even in its departed state.



GENUS V.

MYRMELION.

CHARACTER.

THE mouth is armed with jaws, two teeth and four long spiral tongues. The tail, in the male sex, is forked. Their feelers are club formed, and as long as the breast; and the wings bent downwards.

MYRMELION.—ANT EATER.

AS few insects afford greater entertainment, or gratify curiosity more, by their wiles and stratagems, than this; we shall forbear all uninteresting description, to confine ourselves to what we think more essential. Before the head of the larva, is placed a dentated forceps, with which they catch and suck flies, and ants especially. This animal having a retrograde motion, which prevents its being able to pursue its prey, it has recourse to the following stratagem. Having dived into the sand, or soft mould, it hollows out furrows, that meet in a centre, and grows deeper by degrees. The superfluous sand it carefully removes from the scene of action; after this, it digs a hole, like a funnel, at the bottom of which this animal stations itself, suffering only its extended forceps to be seen above it. Ruin awaits the insect that falls,

unfortunately into this cavity. The myrmelion, being apprised of its approach, by grains of sand rolling down to the bottom, immediately overwhelms the fallen prey with a shower of dust, which it casts with its horns. It then drags the poor captive to the bottom of the hole, where it is immediately destroyed. Such is the rapacity of this creature, that it will prey in this manner even on its own species. This is one of the few instances nature affords of any one sort of animal preying on its fellow creatures. To the disgrace of man, this destruction of each other is very rarely functioned by example, in all the infinite course of being with which the creation abounds.

The perfect insect of the ant eater is very seldom found; when it is, it is chiefly in sandy places, near rivulets.



FIFTH ORDER.

INSECTA HYMENOPTERA.

HYMENOPTEROUS insects have four membranous wings : And most of their tails have stings ; except the males, which are harmless.



GENUS I.

CYNIPEDES.

CHARACTER.

THE mouth is armed with jaws ; but has no trunk. The sting is spiral, and concealed mostly in the body.



CYNIPS.—GALL FLY.

THIS insect is of a burnished shining brown colour : The horns are black, and the feet chefnut ; and the wings are white. The gall fly is produced in

those little smooth, round, and hard galls, which are found fastened to the fibres under oak leaves. This gall is caused by the overflowing of the sap of the leaf, occasioned by the fly having pierced it, for the purpose of depositing there its eggs.—Sometimes, instead of the cynips, a large insect proceeds from the gall, and which is called an ichneumon. This latter insect is not the real inmate of the gall; he is a parasite, whose mother deposited her egg in the yet tender gall; and, when hatched, produces a larva, that devours the larva found there of the cynips. Of this genus, there is a species which causes the galls of which the Norway ink is made.



GENUS VIII.

APIS.—BEE.

THESE insects are divided into several species, which are distinguished from each other, by genius, talent, manner and disposition. Some live in society, and share the toils: Others dwell, and work, in solitude, building the cradles of their families, as the leaf cutter bee does, with a rose leaf; the upholsterer, with the gaudy tapestry of the corn rose; the mason bee, with plaster; and the wood piercer, with saw dust. But all, in general, are employed, in their little kingdom, with providing for their posterity, and contributing to the general welfare of their community.

Of bees there are three sorts; the plebeians, the drones, and the queen. The queen, or parent bee, is the soul of the hive; To her all the rest are so attached, that they will follow her wherever she goes.

If she happens to die, all their labors are at an end, an universal mourning ensues, and all her subjects die, by rejecting their food. Should a new queen arise, before this catastrophe attends the hive, joy renovates their spirits, and their toils are renewed. This has been tried by removing the chrysalis of a queen bee from one hive, to another which had lost its own empress. But this attachment is only in proportion to the utility she affords to the commonwealth. She is so prolific, that she lays 15 or 18,000 eggs, which produce 800 males, four or five queen bees, and the rest neuters, or plebeians. Their cells differ in size; the largest are for the males, the royal cells for the queens, and the smallest for the neuters. The parent bee deposits in those cells such eggs as will produce the species for which the respective cells are destined. In two or three days the eggs are hatched; when the neuters turn nurses to the rest, which they feed most tenderly, with unwrought wax and honey. After twentyone days, the young bees are able to form colonies, with such indefatigable activity, that they will do more, in one week's time, than they will during all the rest of the year. Sometimes there are bees less laborious, who support themselves by pillaging the rest of the hives; on which a battle ensues between the industrious and the despoiling insects. Frequently contentions will arise among them, when a new colony seek their habitation in a hive already occupied. Their foes are the wasp and hornet; which will rip open their bellies with their teeth, in order to suck out the honey contained in the bladder. Sparrows, sometimes, are seen to take one in their bill, and one in each of their claws.

The neuter bees collect from flowers their honey and unwrought wax: They roll themselves over the stamina, and thus cause the dusty essence to stick to the hairs which cover different parts of their bodies. Being thus laden, they proceed with their burden to the hive; where they are met by other bees, that swallow the wax they bring: This being afterwards refined in the laboratory of their stomachs, is again produced by the mouth, as genuine wax, in the form

of dough, which is next moulded into cakes of an admirable structure.

From the nectarious effluvia of flowers, the bee collects the honey, by means of its proboscis, or trunk; which is a most astonishing piece of mechanism, consisting of more than twenty parts. Entering the hive, the insect disgorges the honey into cells, for winter subsistence; or else presents it to the labouring bees. A bee can collect, in one day, more honey than a hundred chemists could extract in a hundred years.

When they begin to form their hive, they divide into four parties: One is deputed to the fields, to collect materials; another is ordered to work on these materials; a third is left to polish the rough work of the cells, and a fourth is allotted to provide for the labourers. There are waiters always attending, to serve the artizan with immediate refreshments, lest he should be too long absent from his work, by going to gather it himself.

So expert are these bees, that an honey comb, composed of a double range of cells backed one against another, and which is a foot long, and six inches broad, is completed in one day, so as to contain 3000 bees. The cells are most curiously composed of little triangular sides, which unite in one point, and exactly conform to the like extremities of the opposite cells, respectively. At every cell, the Creator has, most wisely, taught them to form a ledge, which fortifies each aperture against the injuries they might receive from the frequent ingress and return of the bees.

How grateful ought we to be for the creation of this admirable insect! To his toil and wisdom we are indebted for one of the most agreeable and wholesome substances afforded, by nature. Were it not for the bee, these flowery sweets would be lost in "the desert air," or decline with the fading flower. All the various uses to which wax is applied, would be lost to man, had not the bee an existence.

GENUS IV.

CHARACTER.

THE mouth has jaws, without any tongue. The horns contain more than thirty joints; and the abdomen is generally joined to the body by a pedicle. The sting is inclosed in a cylindrycal sheath, composed of two valves.



ICHNEUMON.

ONE distinguishing and striking character of these species of flies is, the almost continual agitation of their antennæ. The name of Ichneumon has been applied to them, from the service they do us, by destroying caterpillars, plant lice, and other insects; as the ichneumon and mangouste destroy the crocodile. The variety to be found in the species of Ichneumons is prodigious among the smaller species. The males perform their courtships in the most passionate and gallant manner. The posterior part of the females is armed with a wimble, visible in some species, no ways discoverable in others; and that instrument, though so fine, is able to penetrate through mortar and plaster. The structure of it is more easily seen in the long wimbled fly. The food of the family to be produced by this fly, is the larva of wasps or mason bees; for it no sooner perceives one of those nests, than it fixes on it with its wimble, and bores through the mortar of which it is built. The

wimble itself, of an admirable structure, consists of three pieces: Two collateral ones, hollowed out into a gutter, serve as a sheath; and contain a compact, solid and dentated stem; along which runs a groove, that conveys the egg from the animal, which supports the wimble with its hinder legs, lest it should break; and, by a variety of movements, which it dexterously performs, it bores through the building, and deposits one or more eggs, according to the size of the ichneumon, though the largest drop but one or two. Some agglutinate their eggs upon caterpillars eggs, though very hard, and deposit their own in the inside: When the larva is hatched, its head is so situated that it pierces the caterpillar, and penetrates to its very entrails: These larvæ pump out the nutritious juices of the caterpillar, without attacking the vitals of the creature; which appears healthy, and even sometimes transforms itself to a chrysalis. It is not uncommon to see caterpillars fixed upon trees, as if they were sitting upon those their eggs; and it is afterwards discovered that the larvæ, which were within their bodies, have spun their threads, with which, as with cords, the caterpillars are fastened down, and so perish miserably.

The ichneumons performed special service in the years 1731 and 1732, by multiplying in the same proportion as did the caterpillars: Their larvæ destroyed more of them than could be effected by human industry. Those larvæ, when on the point of turning into chrysalids, spin a silky cocoon. Nothing is more surprising and singular, than to see those cods leap, when placed on the table, or hand. Plant lice, the larvæ of the curculiones, spider's eggs, are also sometimes the cradle of the ichneumon fly. Carcasses of plant lice, void of motion, are often found on rose tree leaves. They are the habitation of a small larva; which, after having eaten up the entrails, destroys the springs and inward economy of the plant house, performs its metamorphosis under shelter of the pellicule which enfolded it, contrives itself a small circular outlet, and sallies forth into the open air.

There are ichneumons in the woods, which dare attack spiders, run them through with their sting,

tear them to pieces, and thus avenge the whole nation of flies of so formidable a foe : Others, destitute of wings (and those are females) deposit their eggs in spiders nests. The ichneumon of the bedeguar, or sweet briar sponge, and that of the rose tree, perhaps, only deposit their eggs in those places, because they find other insects on which they feed.

The genus of the ichneumon flies, might, with propriety, be termed a race of diminutive canibals.



GENUS IX.

FORMICA.

CHARACTER.

A LITTLE upright scale is situated between the breast and the belly. The feelers are broken, and have the first articulation longer than the rest. The females and neuters have a sting, concealed in the abdomen. The males and females are winged ; and the neuters are apterous, or without wings.



FORMICA.—ANT.

NOT to impose upon our readers those fables which have been related of this remarkable insect, we shall confine ourselves to the most authentic accounts, and

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to our own observations, in what we shall briefly mention respecting the ant. Sanctorius says, when the ants carry any corn to their habitations, they carry it, exactly in form and intension, as they do bits of wood, for the construction of their dwellings merely. For what purpose should they provide corn for the winter, when they pass that season without motion? But, from what we have lately observed ourselves, we rather imagine this error arose from some persons having seen them dragging a number of their aurelias, when they have been removed, by a hoe or spade, again to their repositories; for these aurelias are exactly of the size and colour of a grain of wheat. The great prudence ants discover, is in sheltering themselves from cold, which, when severe, almost deprive them of motion.

At the beginning of March, if the weather be warm, they go abroad in search of nourishment. If corn be thrown to ants, they remove it from place to place, by some dragging, others lifting, and two or three more pushing forward, the weighty masses. A grain of wheat must be considered in proportion to their size and strength. They have the precaution to make a bank, near six inches high, above the entrance; and to make several roads, to go out and in, by what may be called their terrace walk. From May or June, they work until the season's change discontinues their industry. This labour is entirely for the preservation of their brood, which is produced during the fine weather. When they attack fruit, they tear it into small bits, and thus is each ant enabled to carry home his provender. Liquors which are sweet, they have a mode of saving and carrying some for their young. They send their foragers to seek for food: If one of them proves successful in finding some, he returns to inform the republic, and immediately sallies from the town, to capture the prize. To prevent any delay, obstruction, or confusion, they have two tracks; one for the party loaded and the other for that which are going to load themselves. Should any be killed, some of them instantly remove the slain, to a distance. When pro-

visions are scarce, they portion them according to their present and future wants.

A nest of ants is a small well regulated republic, united by peace, unanimity, good understanding and mutual assistance. Great police in their little labours, prevents among them those disorders, which frequently embarrass and perplex the happiness of even man, who assumes to himself the title and consequence of Lord of the creation. Each ant has its task assigned it; whilst one removes a particle of mould, another is returning home to work. They never think of eating, until all their task is performed. Within their common, but subterraneous hall, which is about a foot deep, they assemble, form their social communities, shelter themselves from bad weather, deposit their eggs, and preserve their aurelias; which, resembling grains of corn, as was observed before, has caused many to mistake them for their granaries.



*SEVENTH ORDER.**INSECTA APTERA.*

APTEROUS insects are distinguished from those of every other order, by neither sex having wings.

SPECIES I.....Is a small spider of a scarlet colour. They are found in woods, and likewise on trees in gardens. They are the only species of spiders that are thought to be venomous, except the tarantula: For spiders are, in general, more frightful than injurious.

SPECIES II.....Has six eyes. The colour is chiefly dark, with a broad streak of light colour in the middle of its back; and the form of a diamond, of the same colour, on the upper part of its belly. The legs are beautifully spotted.

SPECIES III.....This small long legged spider is so finely marked, that it is impossible to describe it, either in words or colours; there being so admirable a combination of green, red and black, interchangeably disposed into the most agreeable forms. The legs are curiously marked with the same colours. Its small eyes are not discernable.

SPECIES IV.....This is one of the leaping spiders. It has eight eyes, placed in a circle; and all that have their eyes thus disposed, leap at their prey, like a cat seizing a mouse. It is extremely nimble. When viewed through a microscope, its beauty appears unparalleled. Black, chestnut, red and white, are most admirably disposed into the most beautiful forms; but to the naked eye, it only appears rough, hairy

and grey speckled. Dr. Hook gives the following diverting account of this spider, as described by Mr. Evelyn in his travels through Italy.

“Of all sorts of insects,” says he, “there is none has afforded me more diversion than the small grey jumping spider, prettily bespeckled with black spots all over the body, which the microscope discovers to be a kind of feathers, like those on butterflies wings, or the body of the white moth. It is very nimble by fits, sometimes running, and sometimes leaping like grasshoppers; then standing still, and setting itself on its hinder legs, will very nimbly turn its body, and look round itself every way. Such,” says Mr. Evelyn, “I did frequently observe at Rome, which, espying a fly at three or four yards distance, upon the balcony where I stood, would not make directly to her, but crawl under the rail, till, being arrived right under her, it would steal up, seldom missing its aim; but, if it chanced to want any thing of being perfectly opposite, would, at the first peep, immediately slide down again; till, taking better notice, it would come, the next time, exactly upon the fly’s back; but, if this happened not to be within a competent leap, then would this insect move so softly, as the very shadow of the dial seemed not to be more imperceptible, unless the fly moved; and then would the spider move also in the same proportion, keeping that just time with her motion, as if the same soul had animated both those little bodies; and, whether it were forwards, backwards, or to either side, without at all turning her body, like a well managed horse: But if the capricious fly took wing, and pitched upon another place, behind our huntress, then would the spider whirl its body so nimbly about, as nothing could be imagined more swift; by which means, she always kept the head towards her prey, though, to appearance, as immovable as if it had been a nail driven into the wood, till, by that indiscernible progress, being arrived within the sphere of her reach, she made a fatal leap, swift as lightning, upon the fly, catching him in the pole, where she never quitted hold until her belly was full, and then carried the remainder home. I have beheld them instructing their

young how to hunt—which they would sometimes discipline for not well observing; but when any of the old ones did miss a leap, they would run out of the field, and hide themselves in their crannies, as ashamed, and not be seen abroad for four or five hours after; for, so long have I watched the nature of this strange insect, the contemplation of whose wonderful sagacity has amazed me: Nor do I find, in any chace whatsoever, more cunning and stratagem observed. I have found some of these spiders in my garden, when the weather, towards the spring, is very hot; but they are nothing so eager of hunting as they are in Italy.”

SPECIES V..... This is called the carter, long legged spider. It has only two eyes, which are most curiously placed on the top of a small pillar, rising out of the top of the back. The eyes have a black purple in the centre of the cornea, and the iris of them is grey. It is likewise remarkable for the length of its legs, and diminutive body. The legs are also jointed, like those of a crab; and each terminates in a small shell case, shaped like that of a muscle: They are fastened to the body, in a manner that most curiously displays the wonderful mechanism of nature. Thus is the insect enabled to move, with the greatest celerity, over the tops of grass and leaves, where it searches for its prey. The head, breast and belly of this creature, are so indiscriminated by nature, that it is scarcely possible to discern the one from the other. Many suppose it to be meant by the Creator as the air crab; and adapted to the light element, in the same proportion as the sea crab is adapted for the water.



GENUS VIII.

ARANEA.

CHARACTER.

THIS insect has eight feet, as many eyes, a mouth armed with two crotchets, two spiral tongues; and the bottom of the abdomen has two instruments, like nipples, adapted for spinning.

Of these insects there are many different species, that which mostly distinguishes the spider, is the manner of forming its web: She first chooses a place where there is a cavity, that she may have a clear passage, to pass freely on each side, and to escape occasionally. She begins, by dropping on the wall some of her gum; to which she attaches her first thread, which lengthens as she passes to the other side, to which she fixes the thread in a similar manner: Thus she passes and repasses, from side to side, until she has made what may be termed the warp of her web, exactly the size she intends it should be, or which she thinks will answer her purpose of preying on the passing fly. It is observed that in order to finish her work the sooner, she spins several threads at one time: After thus finishing, she then crosses her work with threads, in the same direction as the weaver throws the woof with his shuttle. To prevent her being seen, she weaves a small cell in the web, where she lies, unobserved, until the tremulous thread inform her of some prey being entangled in her toils: She then darts along the line, and seizes the victim, then devoted to destruction. Many superficial observers of nature have wondered from whence the spider could be supplied with the gum she uses in the many webs she is obliged to make, or repair:

They never reflected, that the same providence which knows the spider is hated, and that her web is always in danger of injury, could furnish her with a magazine of both gum and thread, for such exigencies; and that when the magazine was exhausted, it could, by the same means, be replenished. However, it must be admitted the recruits fail in time; for, when the insect grows old, it is deprived of its weaving materials: It is therefore obliged to depend on the generous compassion of the young spider, who will frequently resign its own web to the infirm insect, and weave for itself another.

The web of the garden spider differs almost as much from the web of a house spider, as a net does from a close weaved piece of cloth: But it is, perhaps, more curious in its formation. They greatly resemble a wheel, that has bars crossing the spokes at equal distances. These spaces are in proportion to the size of the prey the spider designs shall not pass through them. Being too small for large flies, moths, butterflies, &c. to pass through with their expanded wings, such generally fall the victims of the spider, whenever they unknowingly fly against its web.

Having given this general description of what is most extraordinary in the spider, we shall now say a few words on the *arana diadema*.—Diademed spider.



ARANEA DIADEMA.—DIADEMED SPIDER.

THIS insect grows very large. The upper part of its belly is most beautifully embellished with black and white dots and circles; in the middle of them is a band, composed of oblong shaped spots, of a pearl colour; resembling, in their arrangement, the fillet

of an eastern king : The ground of this fillet, when viewed in the sun, through a glass, is perhaps one of the richest and most splendid spectacles nature has to exhibit, in all her tribe of insects. The eyes are eight in number, sparkling and placed on the crown of the head : The legs are long, yellow, encircled with dark brown, and furnished with bristles.



TARANTULA.

THIS insect being of this genus, and much resembling a house spider, we shall close our brief system of insects, with a few words on this extraordinary animal. The bite of it, in hot countries, producing the most astonishing effects, naturally first arrests our attention. The quantity of the poison emitted into the wound, is too inconsiderable to render it immediately perceptible ; but, as it ferments, it causes, in about five or six months, the most frightful disorders. The person bit, at this time laughs and dances incessantly, is all agitation, and assumes a most extravagant species of gaiety ; or else is afflicted with a most dismal melancholy. At the return of the period when the bite was given, the madness renews ; and the distempered party repeats his former inconsistencies, by fancying himself a king, or a shepherd, or some other character, according as his shipwrecked reason is driven against the rocks of absurdity. He has no regular train of thought ; all his mind and feelings are but a chaos of wildness and extravagance. Sometimes these unhappy symptoms will continue several years, until death relieves the sufferer. Those who have been in Italy, where the natives are frequently afflicted with this malady, tell us, the only cure is music, from such an agreeable and sprightly instrument as the violin, which is, therefore, one of the most common

species of music in that country : No village, or cottage, is scarcely without it. The tune is chosen according to the natural temper and disposition of the patient : This is discovered by playing several tunes, until the unhappy sufferer by his gestures, shows that one is found agreeable to his fancy : This is thought an infallible sign of a cure being effected. The patient immediately begins to dance, and rises and falls in concert with the modulations of the tune. This is continued until he begins to perspire, which instantly causes an external evacuation of the venom. In this manner are those afflicted with the bite of a tarantula, cured. But, is it not an extraordinary instance of providence, that instrumental music should have attained so great and general a perfection as it has in Italy, where it is necessary to preserve the lives of the natives, who would otherwise frequently die from the bite of this baneful and venemous insect ?



ZIMB.

HAVING observed a curious account of the zimb, in the travels of Mr. Bruce, we could not refrain from extracting it, as a most valuable addition to our small compendium of natural history.

This insect is called the zimb, or tzalsalya. It is a little larger than a bee ; with wings of pure gauze. The head is large ; the upper jaw sharp, and furnished with a sharp pointed hair, about a quarter of an inch long : The lower jaw has two of these pointed hairs ; and the three, joined into one pencil, make a resistance to the finger, nearly equal to that of a hog's bristle. As soon as this winged assassin appears, and his buzzing is heard, the cattle forsake their food, and run wildly about the plain, till they die, worn out with fatigue, affright and pain. The inhabitants

of Melinda, down to Cape Gardefan, to Seba, and the south coast of the Red Sea, are obliged to put themselves in motion, and remove to the next land, in the beginning of the rainy season : This is not a partial emigration ; the inhabitants of all the countries, from the mountains of Abyssinia, northward, the confluence of the Nile, and Astaboras, are once in a year, obliged to change their abode, and seek protection in the sands of Beja.

The elephant and rhinoceros, which, by reason of their enormous bulk, and the vast quantity of food and water they daily need, cannot shift to desert and dry places, are obliged, in order to resist the zimb, to roll themselves in mud and mire, which, when dry, coats them over like armour.

Of all those who have written of these countries, the prophet Isaiah alone has given an account of the zimb, or fly, and described the mode of its operation. Isaiah, chap. vii. ver. 18 and 19. Providence, from the beginning, it would appear, had fixed its habitation to one species of soil ; which is a black, fat earth, extremely fruitful. And, contemptible as it seems, this insect has invariably given law to the settlement of the country : It prohibited, absolutely, those inhabitants of the black earth, called Mazaga, housed in caves and mountains, from enjoying the help of labour of any beasts of burden. It deprived them of their flesh, and milk, for food ; and gave rise to another nation, leading a wandering life, and preserving immense herds, by conducting them into the sands, beyond the limits of the black earth, and bringing them back when the danger from this insect was over.

In the plagues brought on Pharaoh, it was by means of this insect that God said he would separate his people from the Egyptians. The land of Goshen, the possession of the Israelites, was a land of pasture, not tilled, nor sown, because not overflowed by the Nile ; but the land overflowed by the Nile was the black earth of the valley of Egypt : And it was here that God confined the zimb ; for he says, it shall be a sign of this separation of the people, which he had

then made, that not one fly should be seen in the sand, or pasture ground, the land of Goshen. And this kind of soil has ever since been the refuge of all the cattle emigrating from the black earth, to the lower part of Albara : So powerful is the weakest instrument, in the hands of the Almighty.



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CONCISE DESCRIPTION

OF THE

MOST VALUABLE AND CURIOUS

TREES, SHRUBS AND FLOWERS.

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NATURAL HISTORY.

PART IV.

TREES, SHRUBS AND FLOWERS.

IN this part of our natural history, which we have devoted to the subject of trees, we have selected those of foreign production with which we are most interested, from their being the first objects of our commerce, and the most valuable of our exotic delicacies. Under this head of trees, we mean to treat of such plants and shrubs as are particularly deserving the attention of our young students, whether designed for the senate, closet, counting house, or counter.

COFFEE SHRUB.

THE coffee shrub grows in Arabia Felix, and is brought from Mocha : The flower resembles the jessamine ; and the leaf, that of the bay tree. It is propagated by seeds, and grows to the height of eight

or ten feet. The twigs and leaves rise by pairs : The leaves are two inches broad in the middle, from whence they decrease to a point at each extremity. As this tree will not thrive when transplanted, unless kept in mould, it has been found very difficult to rear it in distant climates : But this inconvenience has, by attention and perseverance, been so considerably diminished, that it is now cultivated, with the most promising success, in the West as well as in the East Indies.

The fruit hangs on the twigs, by a foot stalk, containing one, two, or more, in the same place. These shrubs are watered by artificial channels, like other vegetables ; and, after three or four years bearing, the natives plant new shrubs, in consequence of the old beginning then to decline. They dry the berry in the sun, and afterwards divest it of the outward husks, with hand mills. In the hot seasons, they use these husks, roasted, instead of the coffee berries ; and esteem the liquor impregnated with them more cooling.

The coffee berries are generally ripe in April : They are esteemed, as being of an excellent drying quality, comforting the brain, easing pains in the head, suppressing vapours, drying up crudities, preventing drowsiness and reviving the spirits.



TEA SHRUB.

THE tea shrub grows plentifully in several parts of the Eastindies, and affords a leaf which is too well known, according to the opinion of our physicians, in every country in Europe. It is brought from China, Japan and Siam. The leaves are gathered in the spring ; and bear a flower of five leaves, resembling a rose ; and these succeed a cod, like a hazel nut. The

tea shrub flourishes equally in rich and poor ground. The leaves are dried and parched by fire ; in which state they are sent to Europe, and other parts of the world. The best tea is that which is the greenest, best scented, and most free from dust. The cause of tea being so much drunk in Europe, is said to be from the Chinese bartering it for their sage, which they esteem as possessing the most invaluable qualities. This is not improbable, from our physicians having a Latin proverb, respecting sage of virtue ; which asks, Why will a man die with sage in his garden ? Although tea is drunk more for pleasure than for any medicinal purpose, it is justly allowed to possess many salutary qualities.



COCOA TREE.

THIS tree, bearing the cocoa, or chocolate nut, resembles our heart cherry tree ; except that, when full grown, it is much higher and broader. It has a-bundance of leaves, similar to those of the orange tree. It flourishes throughout the year, especially near the summer and winter solstices. As the leaves perpetually replenish themselves, this tree is never disrobed of its verdure. The blossoms are small, regular, and like a rose, but scentless. Every blossom is joined to the tree by a slender stalk ; and leaves, in falling, long green filaments ; which produce a pointed, yellow fruit, of the size of our melons : These adhere to the thick branches, without any intermediate stem ; as if nature thus providentially provided it a support strong enough to bear the greatness of its weight, when grown ripe, and to its largest size. Each fruit contains from between 15 and 25 small nuts, or almonds, covered with a thin yellow skin ; which being separated, a tender substance appears, divided

into several unequal particles, that, although sharp to the palate, are nourishing to the constitution.

These trees grow in all the Spanish Westindies, Jamaica, &c. where they commonly produce fruit every seven years at most, after the first planting : But, in the interim, they are sometimes twice or three times removed ; when great care is taken to secure them, with such shade as may preserve them from the intense heat of the sun. Being once reared, they are not liable to this injury ; and, therefore, the precaution being no longer necessary, is discontinued ; for, being ranged in rows with shady plantains, they are both mutually sheltered by each other from the parching sun, and boisterous winds. It is a tree of singular beauty, profit and utility. Its large, broad and green leaves, hang like so many shields, as if to defend the tender and valuable fruit from injury. As the fruit adheres to the large branches, the tree appears as if most beautifully thudded, from the root to the most large and expanding branches.

The cocoa nuts, affording to the Indians and Spaniards food, raiment, riches and delight, are received in payment, as currency.

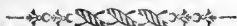
It is unnecessary to add, that, from this extraordinary tree, that wholesome beverage chocolate is made, in such quantities as to supply the greater part of the world with a liquor distinguished for its untritive and restorative qualities.



SUGAR CANE

IS the produce of Barbadoes, Jamaica, Nevis, &c. This plant bears on each joint a cane, five or six feet high, and adorned with long, straight, green leaves, similar to flags, or fleurdelis. On the top they have a plume of silver coloured flowers. The canes con-

tain a porous substance, of which the sugar is made. When they are mature, the canes are cut off, at the first joint from the ground; and are laid in heaps, like our sheaves of corn in harvest time: Being cleared from their leaves, they are tied in bundles, and carried to the mills, which press out their juice: This is put into boilers, in order to evaporate the watery particles, so as to let nothing but the sugar subside. The sugar is then cleared, by a mixture of ingredients, adapted to the purpose of fining and preparing it for graining. While it is boiling, the scum, which rises in great quantities, is clearly taken from the surface, until the sugar is ready to be emptied in the coolers; from whence it is again shifted into earthen pots, with holes in their bottoms, which drain the molasses into other pots, placed beneath: The latter is an entire month in separating itself from the sugar; which is then put into casks, or hogsheads for transportation. The sugar-cane, in England, is so tender as not to admit of being reared without artificial heat. It is, however, preserved as a great curiosity, in the gardens of those who keep hot houses, for the purpose of having such curious and exotic productions of nature.



NUTMEG AND MACE TREES.

NUTMEGS are distinguished by the sexual difference of male and female; but the latter is the most useful, and therefore most valuable. The male is long and large; the female is round and small, which only grows in improved or cultivated lands: While the males, growing spontaneously in woods and forests, are called by the Dutch, the wild nutmegs. The tree which produces the female, or best nutmeg, is as large as a pear tree, and has leaves shaped like those

of the peach. The blossom has a pleasant odour, and resembles the rose. The flower being fallen, a fruit appears, as large as a green walnut : In this is a kernel, which is the nutmeg. It has two barks : The first is very thick, and is taken off when the fruit is ripened ; the other is thin, and of a reddish yellow. When separated from the nutmeg, it is dried, and called *mace*. The nutmegs being divested of their bark, are dried and preserved.

The nutmeg trees grow plentifully in the Asiatic Island of Banda, and in several other islands in that part of the Eastindies which belongs to the Dutch, who are the sole possessors of this produce. It is said those islands so abound with nutmeg trees, as would appear incredible to relate : And the climate is so fertile, and so congenial to their nature, that they produce three crops annually, in the months of April, August and December.

According to Tavernier, this tree is not planted, but grows by means of certain birds, which swallow the fruit whole, and afterwards void it, in its perfect state, but covered with a viscous or gluey matter. Being thus prepared for vegetation, they take root wherever they fall, and produce the trees above mentioned.



CINNAMON TREE.

THIS tree affords a bark, which is the cinnamon, so well known as one of the most valuable of the species consumed in Europe. The tree itself is about the height of the willow : It bears little blue cups, which are odorous ; and are succeeded by the fruit, resembling the olive.

This tree grows spontaneously in the island of Ceylon, which is possessed by the Dutch. There are nine or ten sorts of cinnamon : The best grows in the

greatest plenty, and is the peculiar produce of that island. The natives call it *rasse coronde*, i. e. sharp, sweet cinnamon. The Dutch Eastindia company export it annually, under the strictest orders of no other cinnamon being mixed with it. Every sort of cinnamon tree must grow a certain number of years before it is stripped of the bark. Those growing in vallies, of a white, sandy soil, will ripen in five years; while others, found in a wet, slimy soil, will be at least seven or eight years before they can be stripped: And such as grow in the shade of larger trees, are not only later, but produce a bark not so sweet or agreeable as the more early cinnamon trees. The bad cinnamon tastes bitter, and smells like camphire. The sweetness is entirely owing to a thin membrane, which adheres to the inside of the bark. The flavour diffuses itself through the whole substance, while the cinnamon is drying in the sun. The fragrantcy of the smell, and the sweetness of the taste, have caused this spice to be coveted by all nations. The bark may remain on some trees, 14, 15, or 16 years, without suffering any material diminution in its qualities; but after this period, the taste and smell decrease, and approach to those of camphire. The cinnamon stripped from trees that are too aged, may be known by its being thick, and consequently flat; from the sun not having the power of warping it in the drying. The amazing quantities imported into Europe, and other parts of the world, are falsely said to be produced by the trees barking again, in four or five years: The real cause is, that the trees, being cut down to the ground, sprout branches, which grow, and ripen, so as to produce bark in five, six, seven, or eight years. A species of dove, likewise, contributes greatly to the considerable produce of cinnamon. These doves are called *cinnamon eaters*, from eating vast quantities, and dispersing its fruit over the fields, for the subsistence of their young. Thus is the vegetation of the cinnamon tree extended over the whole island.

The oil drawn by fire from cinnamon, is esteemed as one of our first cordials. The camphire, which is extracted from the root, is a most useful and valua-

ble medicine. Oil of camphire is very costly ; not so much from its scarcity, as from its medicinal efficacy. In a word, there is no part of the cinnamon tree but is useful.



CLOVE TREE.

THIS tree produces a flower, the foot stalk of which is what we call cloves. The fruit, when ripe, is a dark brown. The trees grew most plentifully in the Molucca Islands, until the Dutch pulled them up, to prevent the produce being shared by the English, and other nations. They were then transplanted to an island called Ternati, which was in the entire possession of the Dutch. Thus every other people is obliged to purchase from them this valuable merchandise.

The cloves are only pulled from the trees, spread in the open fields, and thus dried in the sun : The only care that is afterwards required, is to preserve them from the air. Some authors describe the royal clove, so called from bearing on its top a crown ; which is one reason of the king of this island keeping it in his possession ; and from the fabulous opinion, that the other trees bow to this, as their sovereign.



PEPPER TREE.

THE fruit of this tree is the black Eastindia pepper : It grows in the manner of a climbing vine, or creeper, and produces the fruit in small clusters like

our currants. The ripe seeds are about the size of a large currant, which turns, in drying, from a red to a black colour. It is said the common white pepper is only the black stripped of its outward skin, which is effected by steeping it in sea water, then drying and rubbing it in the sand. There is, however, a natural white pepper possessing all the qualities of the black. Three sorts of black pepper are brought from the Eastindies by the English and Dutch, which only differ in the places from whence they are brought: The finest comes from Malabar. The tree or bush bearing the Jamaica pepper grows nearly like the Barberry, except not being so high, and having no prickles. The berries resemble those of the juniper, possess an aromatic taste, which, partaking of those of all other spices, has caused it to be called *all spice*. This pepper grows plentifully in many of the plantations in Jamaica.



GINGER PLANT.

THIS plant is called the club reed; from the root of which is the ginger, which, at the end of every root, is in form like a foot. The leaves of the plant are long, large and of a deep green: And the whole flower resembling a club, has caused it to be called by some the *club reed*, and by others *ginger with a club flower*. Ginger consists of one sort which is white and mealy, and another which is black and hard; the first is the most esteemed. Both the East and West Indies produce ginger: In the Antilles it is greatly cultivated: But the greatest quantities are imported from the leeward islands or Barbadoes, Nevis, St. Christopher and Jamaica. Little is now brought from the Eastindies, except what comes as confectionary, and is called green ginger, which they

prepare in India. Some indeed is prepared in England and other parts, by steeping the fresh roots two or three days in warm water, keeping it all the time in a balneo, which swells and softens it. It is then boiled, either slit or whole, with refined sugar, until it becomes a syrup.



CURRANT VINES.

THIS vine grows most plentifully in a spacious plain near the fortress of Zant in Greece. It produces those currants which are called the *Corinth grape*, vulgarly *currants*, and are sold by our grocers for cakes and puddings. They consist of three sorts, the red, black and tawny. The vine itself is low, has thick indented leaves, and is furnished like other vines with clasps at the joints. These little grapes, which grow in bunches, ripen in August, when the people of Zant gather, stone and dry them. They are then carried into the town, deposited through a hole, in the grand magazine called the Seraglio, where they are pressed in so compact a mass, that it is obliged to be cut with an iron instrument, in order to pack them in casks and bales for exportation.—These currants are likewise brought from several parts of the Levant: But the sort we mostly use, comes from the islands near the Morea. The people near Zant suppose we use them in dying instead of eating. The raisins sold also by our grocers are grapes from vines growing in this country, and which are dried and packed in a similar manner to the currants, but with the difference of their not being stoned. Some indeed assert that, before they expose these vine branches to dry in the sun, they are first dipped into a certain liquor prepared for the purpose.

POMEGRANATE TREE.

THIS tree grows both wild and cultured. The branches of the first are small, angular, and armed with thorns. The bark is red ; the leaves small, like the myrtle ; and the flower is large, of a beautiful garnet, and composed of several leaves representing a little basket of flowers. The cup is oblong, purplish, and in form like a bell.—From this blossom is produced a fruit, which grows into a large round apple with a thick, smooth, brittle rind, adorned with a purple cup. This apple is called the pomegranate, which is too well known in our elegant deserts to require a particular description.—The wild pomegranate is only produced in hot countries. The juice of the pomegranate is much valued in medicine. Of this tree the English reckon five sorts, which are cultivated more for ornament than utility. They consist of the common, sweet, wild, double flowered and American dwarf pomegranate. The first of these is the most common in England, which, with care, has been known to afford fruit that has ripened tolerably well in warm seasons : But as they generally ripen late, they are seldom well tasted. The double flowered, continuing its beautiful bloom for near three months, is esteemed as the most valuable flowering tree yet discovered.



RICE PLANT.

THIS plant is much cultivated in the East, and produces the grain so much consumed, which is called rice. Although a native of the East, great quantities

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of it have been reared in Southcarolina, where it is found to succeed as well as in its original soil : And it being a grain that from its use may be called the manna of the poor, it has proved most beneficial to that province. The plant bears its stalk to the height of three or four feet, and is much thicker and stronger than that of wheat or any other corn. The leaves are long like those of the reed, and the flowers blow in the top like barley : But the seed grows in clusters, and is enclosed in a yellow husk ending in a spiral thread. This plant growing in moist soils, where the ground can be overflowed with water, such as are desirous of cultivating it in Europe should place the plants, reared in a hot bed, in pots filled with rich light earth, and placed in pans of water, which should be plunged in a hot bed, and replenished as the water is by the heat diminished. In July they should be openly exposed, but in a warm situation, and with the same watery nourishment. Toward the latter end of August they will produce their grain tolerably ripened, if the autumn should happen to be favorable. Although rice be chiefly used for food, it is sometimes used in medicine. It nourishes well, stops fluxes, and is therefore found extremely serviceable in armies. As it increases blood, it restores in consumptions. The newest rice should be chosen, and such as is large, white, and well cleansed.



CORK TREE.

OF this tree there are several species.—The chief are the broad leaved, the ever green and the narrow leaved with smooth edges. The first is only requisite to be described, which is always green, of a moderate height, resembling the oak, and having a thick,

light, spongy bark, of an ash colour, which is first taken from the tree, and afterwards separated from the inner bark. The leaves, cups, or acorns, resemble, like the form of the tree itself, those of the oak. It grows in Italy, Spain, and especially towards the Pyrenees and in Gascony, &c. The inhabitants of these countries, when desirous of making a crop of this produce, strip the bark from the top to the bottom of the cork trees, and pile them to a reasonable height in a pit or ditch filled with water. Having loaded these heaps with weights, they leave them until they are thoroughly soaked and straitened; then they are removed to another ditch, and from thence to a third and a fourth. They are next taken out of the water, dried and packed in bales for exportation. To choose the best cork, the finest boards that are free from knots and chinks, of a moderate thickness, yellow on both sides, and firm in texture, should be selected. This best sort of cork is called the white cork of France, from its being chiefly produced about Bayonne in the province of Guienne. From the same part is brought a sort which is called the Spanish cork, which seems as if it had been burnt: But its blackness is said to be caused merely by having been steeped in sea water instead of fresh water. The inside is, however, yellowish, and easily cut. Of this the thickest should be chosen.



TOBACCO PLANT.

OF this production there are five species: The first is the Oronoko, of which there are two sorts; the one has very broad, rough, roundish leaves; while the leaves of the other are narrow, smooth and pointed: But neither of them is valued by the planter, in consequence of their not being much consumed in

England. The second sort is called the sweet scented tobacco, from its affording, when smoked, a most agreeable scent; this sort is very much cultivated in Cuba, Brasil, Virginia, and several other parts of America; from whence it is sent to most parts of Europe, but especially to England, where its general culture is prohibited, lest the revenue should be diminished. The third sort is the greater narrow leaved perennial tobacco, imported from the French settlements in the Westindies into the royal gardens at Paris, where it is cultivated in small quantities for the making of snuff. The fourth and fifth sorts are preserved in Botanic gardens, less for use than for variety.

Tobacco is raised from seeds sown in a rich ground, where the rising plants are covered, to defend them from the sun: In the rainy seasons they are transplanted into large pieces of ground that are cleared and prepared for the purpose. The distance of the rows in these plantations is about two or three feet, or such a distance as will not admit their extending leaves touching, which would cause them to rot, by corrupting each other. The tobacco being thus transplanted, they only require to be weeded, until the flower stems appear, when they cut off the tops in order to afford more nourishment to the leaves: The leaves hanging on the ground are likewise pulled so as to let remain about ten or twelve upon each stalk, which causes a great increase. The leaves, when ripened, are cut and spread upon the ground: They are then strung upon certain cords in little knots, at such distances as the plants may not touch one another: They are next hung to dry in the air, in a situation guarded from the wet, during fifteen or twenty days. When sufficiently prepared, they are made into such forms as the purchaser desires.



COTTON PLANT.

THE fruit of this plant is the cotton which is so much used as a material of manufactures chiefly made at Manchester. Its plant bears a stalk about eight feet high, covered with a reddish hairy bark, divided into several short branches. The leaves are rather less than those of the sycamore; they are shaped like those of the vine, and are suspended by small stalks adorned with a nap or hairy substance. The flowers are fine, large and numerous, of a yellow colour mixed with red or purple, and shaped like a bell: The flower is succeeded by a fruit as large as a filbert, which, being ripe, opens into three or four partitions, where the cotton is found as white as snow. Heat swells each flake to the size of an apple. There is another sort of cotton tree that differs from the former in size; for this grows to four or five feet high: The flowers and fruit are like the former. Both these sorts grow in Egypt, Syria, Cyprus, Candia and the Indies. In Jamaica, Barbadoes and other parts of the Westindies, the cotton plant grows to a tolerable height, and spreads on every side its branches; it has small, green, pointed leaves, and bears a yellow flower resembling in form the rose of the sweet briar. The fruit is as large as a tennis ball, and has a thin crusty shell, of a brown or blackish colour. In these are found the cotton. In some of the American plantations there are cotton bushes very much like those of Egypt, Arabia, &c.



MANDRAKE PLANT.

THIS plant is of two species : One is the common, and has a round fruit called the male mandrake ; the other has a purple flower, and is called the female mandrake. The leaves of the former rise immediately from the root, and are about a foot long, and broader than a man's hand, of a smooth surface, deep green colour, and of a disagreeable smell. The flowers of both are shaped like a bell, which leave a soft globular fruit containing many seeds, shaped like a kidney. The root, according to some naturalists, represents the lower parts of a man, and is therefore called anthropomorpha, which, in Greek, signifies the figure of a man. But this feigned resemblance of the human form is only devised by the cunning of quacks and impostors, who deceive the ignorant by forming the fresh roots of briony and other plants into these resemblances. There is likewise another ridiculous fable devised respecting this plant ; which is, that as it is certain death to those who root it from its parent mould, the stem is tied to a dog's tail, and thus it is taken from the earth in order to prevent the above disaster happening to any of the human species. — The report of the mandrake crying like a child, when torn from its soil, is equally false and ridiculous ; for many of this plant have been removed without any other effects than those attendant on the removal of all deep rooted vegetables. But what deserves credit relative to the mandrake is, that the roots will remain found above fifty years, and retain all the vigour of the most youthful plants : They should never be removed after their roots have arrived to any considerable size, lest the lower fibres should be broken, and thus the growth of the plant be diminished, and its strength debilitated ; if thus injured, they will not recover their former vigour in less than two or three years. Both the male and female mandrake grow in hot climates, and are mostly found in plains. They

are propagated in gardens by seeds, which should be sown upon a bed of light earth soon after they are gathered. In this situation they should remain until the latter end of August. Having kept them during this time free from weeds, they should be transplanted into the places of their future vegetative existence. The soil of these should be light and deep, in order to admit the roots penetrating so low into the earth as they are by nature formed to fix themselves. Thus transplanted, they will produce great quantities of flowers and fruits for a series of years. The mandrake is mentioned in the thirtieth chapter of Genesis, where Reuben is said to have found one in the field during the wheat harvest: It being said in the Canticles, "The mandrakes give a smell, and at our gates are all manner of pleasant fruit," seems as if the fruit of the mandrake was delightful in smell; for surely Solomon must mean a grateful smell, otherwise he would never have chosen it as an embellishment of a pastoral song. However, the mandrake known to us at present has no such delightful quality as to render it so valuable as to cause a woman to exchange her husband, as Rachel did, for one of them.



BALM OF GILEAD.

FROM the trunk of this plant flows a white liquid balsam, which bears the name of the vegetable. The plant bears leaves like rue; and white, starry flowers, which produce, in their middle, berries enclosing a small kernel. When the balsam first runs, it is of the consistence of oil of sweet almonds; but age causes it to resemble turpentine; when it loses great part of its perfume, and turns rather blackish. When fresh, the smell is most agreeably aromatic, and the taste like citron peel. Jericho was the only place where this

balsam was to be found: But, since the Turks have possessed the Holy Land, these shrubs have been transplanted into the gardens of Grand Cairo: where they are guarded, during the flowing of the balsam, by the Janissaries. At this time it is very difficult for the christians to obtain a sight of these balsams. With respect to the balsam itself, it is almost impossible to obtain any, unless from an ambassador, who may have some sent him, as a present, from the grand seignior, or from the soldiers appointed to guard this valuable liquid. This circumstance plainly evinces, that the balsam sold here, can only be the white balsam of Peru; which is prepared with spirit of wine rectified, or with some distilled oils. Mr. Pomet says he received from a friend, the present of an ounce, which he brought from Grand Cairo. He describes it to have been of a solid consistence, like the turpentine of Chio, of a golden colour, and a citron smell.



CEDAR OF LIBANUS.

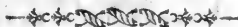
THIS tree is very large, thick and straight: The leaves are slender, and much narrower than those of the pine tree; they are disposed in clusters along the branches; upon the upper part of them grows erect the fruit, like our pine apples; but they never drop in a whole state. It is said there issues from the trunk, in warm months, a sort of white resin, which is very clear, of a grateful odour, and is called cedar gum: The large trees are said to afford no less than six ounces per day of this substance. The cones of the cedar, if preserved in time, will contain their seed for several years. They ripen most commonly in the spring, and are nearly twelve months old before they arrive to us from the Levant. To manage

the cedar plant, we refer our readers to Miller's directions, in his gardener's dictionary.

What is mentioned in Scripture, respecting the lofty cedar, cannot be applied to this tree; which, instead of rising in height, is more inclined to extend its branches in breadth. Mr. Maundrel observes, that when he visited mount Libanus, he only found sixteen large cedars remaining; but that there were several young trees of a smaller size. One of the largest he found to be twelve yards six inches in circumference, and thirtyseven yards in the spread of the boughs. At about five or six yards from the ground, it was divided into five limbs, each being as large as a great tree.

Cedar is said to be proof against the putrefaction of all worms, or animal bodies. The saw dust is thought to be used by those mountebanks who pretend to have the secret of embalming. The wood is said, likewise, to yield an oil which preserves books and writings.

My Lord Bacon asserts, that cedar will continue found a thousand years. Of this wood it is needless to observe, that the timber work of that glorious structure, the temple of Jerusalem, was formed.



ANANA PLANT.

FROM this plant is produced a species of pine apple that is reckoned, from its richness of flavour, the king of fruits. It has the delicious tastes of the peach, quince and muscadine grape, united. The top of it is adorned with a little crown, and a bunch of red leaves like fire. When the crown falls, which is thought to be an emblem of its royal excellence, another succeeds, possessing all its predecessor's quali-

ties. The plant is herbaceous, and has leaves somewhat resembling those of the aloe. The fruit, which is like the cones of the pine tree, is supposed to have been the cause of its name. The place of its nativity is not determined: It was, however, first brought from the Eastindia factories, and planted in the hottest islands in the Westindies, where it succeeded so well, as to afford now a most plentiful produce. It has lately been introduced, with success, into the European gardens. The first person who succeeded in this attempt, was Mons. Le Cour, at Leyden, in Holland. From him, the gardens in England were first supplied with this royal fruit. From its juice, is made a wine, almost equal to Malmsey sack; it will, likewise, intoxicate as soon as the strongest juice the grape affords.



GREAT AMERICAN ALOE.

THE aloe is a plant, which has leaves thick, and armed on the edges with spines. The flower consists of the leaf which has six parts at the top, like the hyacinth: The fruit is oblong, and divided into three cells; in which are enclosed flat and semicircular seeds. In the curious gardens of Botany in England, there are near forty different sorts, which are natives of both the East and West Indies: But the most curious aloe is brought from the Cape of Good Hope. Most of the African aloes produce flowers annually, when grown to a sufficient size, which is often in the second, and seldom more than the third or fourth year after planting from off sets: But the American aloes, which produce their flower stems mostly from the centre of the plant, seldom flower until they are of a considerable age, and then but once during the

life of the plant ; for the flower stem, shooting to so high a stature, draws from the centre such a quantity of nourishment as to render the leaves irrecoverably decayed : And when the flowers are full blown, scarcely any of the leaves remain alive : But whenever this happens, the old root shoots an innumerable quantity of offsetts, by which these plants are not only preserved, but considerably increased.

The accounts of this plant are, like those of many others, rather fabulous. That of its blooming only once in a hundred years, and making a report like a gun, are equally false ; for many American aloes have been known to bloom in much less time. In the year 1729, a great American aloe flowered at the age of forty years, in a garden belonging to Mr. Cowell, at Hoxton : And of a later date, some have been known to bloom at the distance of twenty years.



SENSITIVE PLANT.

THIS plant is very surprising in its contexture, and has caused much investigation among the naturalists, to account for the contraction of its leaves when any of them are touched. They close themselves by pairs, joining their upper superficies together. Aquafortis being dropped on the sprig between the leaves was found to cause them to close by pairs successively to the top of each sprig, and to continue in this state some time : But the next day the leaves on two or three sprigs were again expanded, except those on that where the aquafortis had been dropped, being withered from the place upwards, although they continued green downwards. A pair being suddenly cut off with scissars, the next pair above and below immediately closed, and after a little time all on the same sprig followed the example, which extended even to

those on other sprigs. One of the harder branches being cut, emitted a liquor, which was very clear, and of a bright greenish colour, bitter in taste, and somewhat resembling that of liquorice. The above experiments were made by Dr. Hook on some sensitive plants growing in a garden in St. James's park.

In the passage of the isthmus from Nombre de Dios to Panama, in America, there is related to be a whole wood full of sensitive plants, which being touched, close their leaves with a rattling noise, and thus twist themselves into a winding figure.



NATURAL HISTORY.

PART V.

SCIENCE OF BOTANY

BRIEFLY EXPLAINED.

TO usher our young readers into this pleasing and instructive science, we offer the following compendium of botanical illustrations, to their attention, before they proceed to the study of the flowers we have in the following pages, shortly described.

Every science, except botany, possesses a language peculiar to itself. Every person who has pretended to teach, or explain, the nature of plants, has chosen terms to express himself, according to his own caprice, or his particular stile of observation. This arbitrary mode of treating botany, has considerably bewildered the student; and even, sometimes, dissuaded him from pursuing the science with that avidity and pleasure he would otherwise have done. Although the vocabulary of botany has been always subject to this variation, it has never experienced more innovation than of late years: But, notwithstanding we lament this deficiency of stability in botanical language, we are happy to find that, sometimes,

the alterations have been very judicious amendments of terms falsely used by the ancients : For the modern botanists have named the plants from the parts which they contain ; while their predecessors have named them from outward appearance, or supposed qualities. Thus are the long terms, and denominations, which only perplexed the mind, and burdened the memory, abandoned. Conformably to this improvement, Linnæus proposes simple and proper terms, to express not only the different parts of plants, but, likewise, their forms, qualities, situations, directions, and mode of existence of each part respectively. This method has, in general, been adopted by all succeeding writers in this science.

No method could be so proper for classing plants, as that adopted by Linnæus ; namely from their sexual difference. This is most natural, and least subject to variation, from the difference being described according to the variation of the stamina in the male, and the pointals in the female parts of a plant.

According to modern botanists, plants are described as consisting of six parts :—The root, *radix* ; the trunk, *truncus* ; the support, *fulcra* ; the leaves, *folia* ; the flowers, *flores* ; and the fruit, *fructus*.

I. RADIX.—ROOT,

IS that part of the plant which adheres to the ground, from whence it draws its nourishment.

Roots are either fibrous, bulbous, or tuberous.

THE FIBROUS ROOT

is either perpendicular, horizontal, fleshy as the carrot, hairy as the roots of *grass*, or branching.

BULBOUS ROOTS

(among which are the snow drop, hyacinth and tulip) are either solid, as the *turnip*; coated as the *onion*; scaled, as the *lily*; double, as the *orchis*; or clustered, as the *white saxifrage*.

TUBEROUS ROOTS

are composed of many fleshy tubers, as the *garden ranunculus*; and either adhere closely to the stalk, or are suspended from it by threads.

**II. TRUNCUS.—TRUNK,**

RISES immediately from the root, and sustains the branches. This part is called a trunk in trees, and a stalk in plants.

Stalks are either simple, or compound.

A SIMPLE STALK

grows from the root to the top, as the sun flower; and is distinguished by its either being naked, leafy, upright (as the lark's spur) oblique, twining, pliant, reclining, lying on the ground (as the nasturtium) creeping (as the pansy) having roots as long as itself; living several years, or only one year; being woody, shrubby, cylindrical in form (as the star flower) having two, three, or more angles; and being streaked, furrowed, or channeled, smooth, rough, (as the asper) hairy, or prickly (as the rose.)

A BRANCHING STALK

is one that shoots lateral branches, as it ascends, as the wall flowers; and is distinguished by the branches being either irregular, large, numerous (as the piony)

supported, prolific in leaves, fruit, or flowers (as the lily of the valey, and the jonquil.)

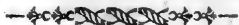
A COMPOUND STALK

is one soon divided into branches, as the flower of Parnassus ; and is distinguished by being either forked, having two ranges of branches, or having these ranges subdivided ; tubular like a straw ; being entire, branched, uniform, jointed (as a pink) scaly, or with, or without leaves.



III. *FULCRA*.—SUPPORT,

IS that part which sustains or defends certain parts of a plant, and is divided into the following ten kinds ; the leaf supporting the flowers the tendril or clasper (as the honeysuckle and sweet pea) the spine, the thorn, the footstalk of the leaf, the footstalk of the flower or fruit (as the columbine) the general stalk, the gland, and the scale. Each of these have their subdivisions, which we omit, as being too minute for the attention of young students.



IV. *FOLIA*.—LEAVES,

ARE divided into the three classes, of single, compound and determinate.

Single leaves are those that have footstalks supporting only one, as the cyclamen ; and are described

according to their circumference ; border, surface, summit and substance.

THEIR CIRCUMFERENCE & BORDER

are either round, nearly round, oval, reversed oval, oblong, shaped like a wedge, angular, spear shaped (as the belvidere) narrow, shaped like an awl, triangular, deltoide, or having four corners, quinqueangular or five cornered, shaped like a kidney, a heart, a moon, an arrow, or a pike, divided into two or three parts, formed like a hand, pointed like a wing, jagged, indented (as the tuberoſe) divided or not into parts, ſingly or doubly ſawed, notched, griſly, ciliated or hairy like an eye lid, lacerated, or ſeemingly torn or bitten, curled, or entire.

THEIR SURFACE

is diſtinguiſhed by being either downy, ſoft as velvet; hairy, as the foxglove; ſtinging; rough; ſmooth, as the daiſy; briſtly, prickly, warted, poliſhed, plaited, waved, wrinkled; veined, as the gillflower or carnation; nerveſe; plain, as the auricula flower; depressed, compressed, convex, concave, or channelled.

THEIR SUMMIT, OR TOP

is either truncated, blunt, as if bitten, hollow, obtuſe, pointed (as the amaranthus) ſhaped like an awl, or taper like a pillar.

THEIR SUBSTANCE

is either hollow, fleſhy, or membranous (as pinks.)

Compound leaves are either ſimple or decompoſed.

A COMPOUND LEAF

is formed of ſeveral ſmall leaves growing from one footſtalk, and is conſidered as one whole, produced from a ſingle compoſition, as the ranunculus, roſe, carnation, pink, &c. They are either fingered, compoſed of two, three, or many leaves, reſembling wings expanding from their common footſtalk, and having alternate leaves, or being doubly winged.

A DECOMPOUND LEAF

has a footstalk dividing twice or more times before it is garnished with leaves.

Determinate leaves are distinguished by their direction, place, insertion, or situation.

THE DIRECTION

is the manner in which the leaf expands from the bottom to the top, and is either arched, upright, spreading, horizontal, reclining, or revolving backwards.

THE PLACE

is determined by the part of the plant where it is fastened, and is either called the seed leaf from rising immediately from the seed, or radical from rising first from the root.

THE INSERTION

is the manner in which a leaf is fastened to a plant, and is either fastened to the disk, or has a footstalk to its base, grows from the branch without a footstalk, is fastened by a membrane, or surrounds the stalk, without any part of the border adhering to it, like the hare's ear.

THE SITUATION

is considered from the position of each in relation to the others. The situation is, therefore, either jointed, surrounding the stalks like stars, opposed to each other (as the jessamine) growing in an alternate position on each side their footstalk, or without any order, clustered (as the flowers of the sweet William) ranged like the tiles of a house, or the scales of a fish.



V. FLORES.—FLOWERS.

THE flowers of plants are divided into four parts : The cup, CALYX ; the petal, or flower leaf, COROLLA ; the flamen, STAMINA ; and the pointal, PISTILLUM.

THE CUP OF THE FLOWER is that which incloses, and sustains the flower ; and is divided into seven sorts ; the PERIANTHIUM, INVOLUCRUM, SPATHA, GLUMA, AMENTUM, CALYPTRA and VOLVA.

THE PERIANTHIUM is the most common of the flower cup ; consists often of many parts ; sometimes of only one part, separated half way into several divisions, as the India pink ; and always surrounds the bottom of the flower.

THE INVOLUCRUM embraces many flowers collected together, and which have each of them a perianthium.

THE SPATHA is a sheath, which covers one or more flowers, that are generally without a perianthium ; it consists of a membrane, fastened to the stock ; and differs in its figure and substance.

GLUMA is a sort of chaff, which particularly covers grain and grass seeds.

THE IULUS, or AMENTUM, is a mass of male or female flowers covered with small scales, and fastened to an axis, in the form of a rope, as the irregular flowers of the violet.

THE CALYPTRA, or COIF, is a thin, conical, membranous cover to the parts which generate fruitage.

THE VOLVA, or PURSE, is a thick covering inclosing several species of mushroom productions.

THE COROLLA, PETAL, or FLOWER LEAF, is one of those which form the flower, and surround the generative parts of the plant itself. Of these there are the PETAL and the NECTARIUM: They are either entirely one, as the convolvulus, or formed of many pieces. The petal is generally distinguished by the beauty of its colour, and the nectarium by containing those sweet juices which the bees change into honey. The corolla is sometimes without a footstalk, as the martegon.

THE STAMEN is the male part of flowers, and consists of the FILAMENT and the summit or ANTHERA, as the passion flower.

THE FILAMENT sustains the anthera, apex, or summit, and is either formed like a thread, or shaped like an awl.

THE ANTHERA, APEX, or SUMMIT, is the essential part of the stamina, and contains the male organ of generation. It consists of a little bag, of one or more cavities, containing the male farina.

THE PISTIL includes the female parts of flowers, and consists of the GERM, STYLE and STIGMA.

THE GERM incloses and defends the seeds.

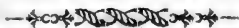
THE STYLE rises from the germ, and supports the stigma.

THE STIGMA is the female organ of generation, and is situated upon the top of the style, if any; if not, it sits upon the germ.



VI. *FRUCTUS*.—FRUIT.

THE different species of fruit, such as plums, berries, apples, seeds, &c. are too well known to require a description.



CLASSES.

FLOWERS are either hermaphrodite, from having both the sexual distinctions of male and females, stamina and pointals; male, from having STAMINA only; or female, from having only POINTALS.

THE STAMINA are either detached from each other, united together by one of their parts, or joined sometimes with pointals: They are of equal length, or have some shorter than the rest; and the number, proportion, and situation of the stamina determine the CLASSES, as the differences of the pointals determine the ORDERS of flowers.

The classes, according to the number of stamina in the male parts of the Flower, are called,

1. MONANDRIA, one stamen.—2. DIANDRIA, two stamina.—3. TRIANDRIA, three.—4. TETRANDRIA, four.—5. PETANDRIA, five.—6. HEXANDRIA, six.—7. HEPTANDRIA, seven.—8. OCTANDRIA, eight.—9. ENNEANDRIA, nine.—10. DECANDRIA, ten.—11. DODECANDRIA, eleven.—12. ICOSANDRIA, when more than twelve.—13. POLYANDRIA, when more than thirteen.

Those Flowers which have two stamina shorter than the rest, are called,

14. DYNAMIA, as having two long and two shorter stamina.

15. TETRADYNAMIA, as having four long and two shorter stamina.

Those Flowers which have their stamina united together or with a pointal, are thus distinguished.

16. MONADELPHIA, stamina united into one body.

17. DIADELPHIA, stamina into two bodies.

18. POLYADELPHIA, stamina into three or more bodies.

19. SYNGENESIA, the stamina forming a cylindrical body.

20. GYNANDRIA, the stamina sitting upon the pointals.

Those Plants of different figures are thus distinguished.

21. MONOECIA: The plants of this class have male and female flowers upon the same individual.

22. DIOECIA, have male and female flowers on different individuals.

23. POLYGAMIA, have hermaphrodite flowers upon the same individual.



ORDERS.

THE orders, or subdivisions, of the classes, are distinguished by the pointals, or female parts of the plant or flower, as the classes are by the stamina, or male parts of the flower. The number of pointals or stigmas are counted.

The chief distinctions are the number of pointals, and nature of seeds, the nature of pods, and the number and gender of the florets. According to the number of the pointals, the orders are termed monogynia, digynia, &c. according to the nature of the seeds, gymnospermia, angiospermia ; according to the pods, siliculosa, filiquosa ; and according to the number and gender of the florets, they are termed polygamia æqualis, polygamia superflua, &c.



A

CONCISE HISTORY

OF

F L O W E R S.

JONQUIL.

THIS charming flower comes, with all its graces, to deck the spring : It consists of several species ; but the great jonquil has a stem, about a foot in height, which bears, from a third part upwards, several golden blossoms, consisting of five or six leaves, all curling in a most beautiful manner. It is multiplied by seed ; but, more properly, by their bulbs. They require good, but not a very rich soil ; and are usually planted along the borders ; thus affording a most agreeable embellishment to the walks and parterres of any garden meant to be distinguished for its taste and elegance.

ANEMONE.

THIS beautiful flower, with proper culture, will blow twice a year; and thus continue to grace our gardens, when they are abandoned by all the rest of the flowering tribe. Their colours are chiefly red, blue and purple. The root of these plants should be taken out of the ground, and preserved, like those of the ranunculus. They grow best in a sandy soil.

When the seeds crack, or shew their down, they should be gathered, to prevent their being dispersed by the wind. From these seeds, innumerable varieties may be raised: And if they are sown in February, and lightly covered with earth, they will blow the second year after sowing.



LILY.

THIS flower is a great ornament to a garden. The noble height of its stem, and the simple grandeur of the flower, render it a most delightful spectacle to those who have the least taste for the beauteous productions of nature. The lily is too well known, and admired, to require any particular description of its form or colour. The culture requires no curious rules, from its being easily reared in any soil: And, as if nature meant this charming flower should be enjoyed by the poor as well as the rich, we find it thrives with the least attention. Such is the beauty of the lily, that many European noblemen place them in pots, in order to decorate the avenues to their sumptuous palaces.

Some garden walks are entirely bordered with them : And, indeed, wherever they are placed, they are always beautiful.



LARKSPUR.

THE larkspur is one of those flowers that seem to delight in displaying the variety of colours with which the flowers of each stem are decorated. They grow on stalks of three feet high; and, when choicely reared, afford, in a bed, one of the most beautiful spectacles that Flora has to present, for our delight, wonder and contemplation. It is generally sown in February; and may be expected to blossom, in all its richness of splendid beauty and elegance, in June and July. If properly attended, they will continue their bloom until August or September.



DAFFODIL, OR LONG NECKED NAR.

CISSUS.

WHICH is called *cou de chameau*, i. e. camel's neck, from the long stalk, when charged with flowers, representing the neck of this animal. This flower is to be admired for its being an agreeable ornament to the rural parts of a garden. They blossom in the spring, and grow about a foot high. The daffodil

scill thrives best in a rich soil, with which the bulbs need only be covered : It should not be much exposed to the sun, from the flower deriving most beauty from the lateness of its appearance. The bulbs should be set about four fingers distant from each other, in order to afford sufficient room for their expansion. It should be removed every three years. They flower in March.



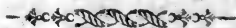
COLCHICUM, OR MEADOW SAF- FRON,

IS so called from its growing in Colchis, a country in the neighbourhood of the kingdom of Pontus, famous for the fable of the golden apples, and the golden fleece. It is said to be so strong a poison as to kill dogs, from which quality it is called Dog's bane. Of the meadow saffron there is a variety of species. Its general description is, being a plant that shoots from its root five or six oblong leaves, about an inch broad, smooth, and of a brownish green. Amid these leaves rises the stalk, bearing at the top a yellow single leaved flower like a pipe, and cut into six parts. The Colchium will grow in any soil. It is multiplied by bulbs, which are produced every year in abundance. They should be planted in pots or borders, and transplanted in July ; in which state they should lie until September. They flower in March.



POLYANTHUS

IS divided into the primrose and cowslip kind ; and these are subdivided again into the single flowering, double flowering hose in hose, pentaloons, and feathers. The single flowering are chiefly white, yellow, red, purple and violet coloured. They are multiplied by seeds, sown in February, upon a place prepared with earth taken out of decayed willows ; often refreshing the new sown spot with water ; and keeping it shaded from the sun, all April and May, until the young plants appear. The Primrose kind blossom close to the ground ; and the Cowslip species, about six inches higher. Both these sorts may be planted near the edges of borders, and near houses, for the enjoyment of their agreeable smell. Nothing can be more delightful than a number of these Flowers, accompanied with violets, growing under hedges, in avenues, and artificial wildernesses. They flower in April.



PERSICARIA,

HAS a towering stem, about five feet and a half high, resembling a Sugar cane, which, towards the bottom, is garnished with several large green leaves, like those of lilac. It has a garnet blossom which grows in the form of a feather, that hangs from their stems with considerable grace and beauty. They are cultivated in most gardens distinguished for their choice assemblage of elegant flowers. Their time of blossoming is during the summer months, when the

parterres of those gardens in which they are cultivated, derive considerable ornament from their beautiful and singular appearance.



TULIP.

THE tulip requires nothing but a fine scent, to render it the finest flower in the world. Their infinite varieties display such beauties as eclipse every other pride of the garden. These ornaments of nature are as kind as they are beautiful; for they continue regaling the sight with a succession of their charms, from March to the latter end of May. They are divided into classes; the early and later blowers. Their varieties are chiefly distinguished by the names of cities, or such like characters. A good tulip is known by its towering stem, its beautiful colours; with a flower shaped like an egg, without sharp points to their petals; but what renders them the most valuable, is their variety.

The flower stems, being left upon the roots, will perfect their seeds about July. The seeds are gathered when they begin to crack.



JERUSALEM CROSS.

THIS flower is a species of the *Lychnis*; and it is called by botanists, *Flos Constantinopolitanus*, from being originally brought from Constantinople. This

plant shoots into several stems, about two feet high; and divides itself into different branches. The leaves are long and pointed, of a green and brown colour. On the top of each stem grow the flowers, consisting of five leaves, which hang down, like the tops of fennel, and represent little crosses, sometimes of a white, but more generally of a scarlet colour. They have an agreeable odour. The Jerusalem cross will thrive in any substantial soil; but it grows best in the shade. The culture is the same as of the *Lychnis*; to which we refer our readers. It flowers in July; and is reckoned a great ornament, among any others you may please to plant it. Care should be taken to water it, in hot and dry seasons.



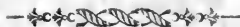
NARCISSUS.

OF this flower there are several species; but as the *narcissus polyanthus* is one of the most early blossoms, we shall briefly describe it. Its scent is so sweet, that many consider it not less desirable than the *Jonquil*. This, like all the other *narcissuses*, should be propagated from offsets, taken from their roots.

The *polyanthus* is greatly admired for its splendor and variety of colour, in both of which it has no small resemblance to the *auricula*. In the rural parts of our gardens, these, as well as the *daffodil narcissus*, are a very agreeable ornament; which has caused them to be mentioned by the most eminent of pastoral writers.

FRITILLARY

IS a plant that has a stem about a foot high, round, smooth, and of a deep green colour. It is garnished with about six or seven leaves, placed irregularly, and which are long and narrow. At the top of the stem grow one or two flowers, hanging down in the shape of a bell: These are speckled with several colours, and are composed of six leaves. The colours, being placed in the form of a chefsboard, have caused this plant to be called the Fritillary, *Fretillus*, which signifies a chefsboard. Fritillaries are multiplied by bulbs and seeds. The bulbs are planted in September. They should be placed three inches deep, and at the same distance from each other. They flower in April.



JESSAMINE.

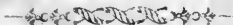
ALTHOUGH all the species of Jessamines grow in a very irregular form, and are never submitted to the pruning knife, they are a beautiful ornament to any garden. Of the Jessamines there are too many sorts to be here described; we shall therefore confine ourselves to the common jessamine, which is so great a decoration to our gardens. It is a shrub that shoots forth several small branches; which are adorned with leaves oblong, pointed, placed in pairs along each branch, which terminates with a single leaf: At the end of the branches grow the blossoms, in form of umbrellas, consisting of five delicate white leaves, which possess a most agreeable smell. When the jess-

famine is in bloom, nothing can be more pleasing than the contrast of the green ground with the starry flowers with which it is so numerously studded.



CARNATION.

THESE are called, by the Greeks and Romans, the white violet, from being of the same species with respect to the flowers. The Gilly flower is reckoned one of the most principal ornaments of our gardens. The variety and great number of its flowers seem to have acquired it this distinction. The leaves of the stem resemble those of sage : From the middle of the root, the stem rises about eighteen inches, and then runs into several branches, tufted with beautiful flowers, composed of four leaves, in the form of a cross, which have a most fragrant smell. This plant is raised from seed sown in March, in hot beds. in small drills drawn across each other : The seed being sown, is covered, with the hands, as lightly as possible. When the plants appear, they must be secured from the frost by glasses, matting, or dry dung. Among the gilly-flowers is ranked what is commonly called the carnation, old blowers, &c.



PASSION FLOWER.

THIS flower cannot be esteemed less than a miracle, since God has thought proper to describe on it the principal emblems of the death and passion of our

Saviour. The leaves are pointed, like a crown of thorns : The whiteness of the leaves represents the innocence of Christ ; the red strings are emblems of his being scourged ; and the little column, in the middle of the flower, is thought by divines to be the figure of the pillar to which our Saviour was bound : Another part represents the sponge ; and the stamina, growing over the pillar, remind us of the three nails with which he was nailed to the cross, and, in a word, the pointed leaves raise a perfect idea of the spear with which his sacred side was pierced. This most curious flower grows in all sorts of ground, especially in a soil inclinable to moist rather than light ; it is multiplied by roots set three inches deep. As the roots spread considerably, care should be taken to prevent their injuring the roots of other neighbouring flowers.



AMARANTHUS

IS a plant that has, rising from its root, leaves that are large, pointed, of a brownish green, bordered with red. From the centre of these leaves grows a stem about eighteen inches high, of a red colour, bearing flowers either of a violet, purple, crimson, orange, red, or scarlet colour. From the beauty and simplicity of these colours, the amaranthus is always esteemed as a most valuable appendage to a garden. The seed, which is remarkably small, curious and beautiful, is preserved in little boxes until the winter. These flowers appear graceful in pots filled with kitchen garden earth and bed mould. If watered constantly and carefully, they will grow, in this state, to a fine size, and will make a most beautiful appearance : And, as the flowers continue a considerable

time, and flourish when other flowers are scarce, the amaranthus is considered as no inconsiderable part of an elegant garden.



ROSE.

ALTHOUGH roses are generally ranked among flowering shrubs, yet, as they are reckoned among the greatest ornaments of a garden, and are the chief beauty of any assemblage of flowers, we should think ourselves remiss, in omitting a brief account of them, in this short description of flowers.

As a general description of the many sorts of roses—they grow on shrubs that shoot forth hard, woody, thorny branches; with oblong leaves, indented, and armed with prickles. On these branches grow the flowers, consisting of leaves, in a round form; their cups are leafy, and turn to round, or oblong pulpy berries. The pale rose is fair, large, of a carnation colour, and possesses an agreeable smell and appearance. The damask rose is a small, white, single or double rose, with a musky scent. The common white rose is large and beautiful; and remarkable for being, with the red rose, worn as the distinction of the houses of York and Lancaster. The yellow rose has broad leaves, of a lemon colour, without smell. The monthly rose is like the damask, and has red flowers, growing in bunches. The striped rose has white and red streaked leaves. And the moss rose is so called, from the stem and outward leaves appearing to be covered with moss, in a manner that appears singularly beautiful.

RANUNCULUS.

THE ranunculus, next to the tulip, is desirable for its beauty. There are several sorts of them imported into England every year from Turkey. This plant blooms in April and May upon stalks about six or eight inches high. The double flowering sorts are crowded with petals, like Province rose flower. The colours of them are deep scarlet, veined with green and golden hues, yellow tipped with red, white spotted with red, orange colours, plain white, yellow with black, and one sort of a peach bloom colour. The single ranunculus blows somewhat taller than the double, and is most agreeably variegated with pleasant colours. They are both increased by offsets, found about the roots, after taken from the ground. They may likewise be propagated from seed, saved from the single blossoms. The English are indebted chiefly to the French for them, in consequence of their climate being too cold for their culture.



DAISY.

THE daisy, being of an agreeable aspect, was called by the Romans, *bellis*, from *bellus*, i. e. handsome. The daisy has small, oblong smooth leaves, both indented, and otherwise: In the middle of these leaves rise little, long stalks, tufted with a radiated flower, which is sometimes white, red and variegated.

The daisy, for its simplicity of beauty, and being the early grace of our banks and meadows, has been

ever, and justly, one of the most charming subjects of pastoral poetry. To gather them, is the first pleasure of lisping infancy ; and to view them, is the first delight of the humble cottager. Although this plant produces seed, yet those who cultivate them in their gardens, replant the split roots. It grows very low ; and is a most proper and beautiful border, either in the flower or kitchen garden.



TUBEROSE

IS a sort of hyacinth, called *hyacinthus indicus*. Although this plant is from such a distance as Asia, yet it is now plentiful in most parts of Europe. The tubero-se has, growing from its roots, several leaves, about six inches long, strait and pointed at the end. In the middle grow a stem, to the height of three or four feet, and about half an inch in diameter. On the top of the stem grow the flowers, like lilies, single leaved, shaped like a pipe, indented, and looking like a bell. The flowers blow successively, which causes the tubero-se to continue long in blossom. So sweet is their odour, that they perfume the place wherein they are set. This plant, if set in May, will flower in Autumn. They should be placed where the sun is hottest. They will be found a greater ornament to windows than to parterres.



SNOWDROP.

ONE of the first offering which Flora displays on the shrine of nature, is the snowdrop. Pallid, like the cheek of spring, are its leaves ; and, like the season in which it appears, its blossom hangs languid on the verdant stem. The flower is composed of six leaves, which together form a blossom, similar in shape to a bell : The odour is as grateful as the colour is delicate. The snowdrop, being a bulbous plant, is raised from its root, and is generally ranged with the narcissus. Although it is a common flower, yet such is its beauty, simplicity, and cheering appearance, that it generally accompanies the crocus in all parterres distinguished for their variety or their elegance.



SWEET WILLIAM.

THERE are two sorts of this plant, consisting of single and double flowers. The single sort only differs in the colour of the flower : The one has branches of blossoms variegated with red and white : The other has clusters of deep crimson coloured flowers. They both blossom in June and July, upon stalks two feet high. The double sort produces its beautiful red flowers in the same months, but upon shorter stems. The single flowered sweet William may be raised from seeds sown in March : They will blossom the second year. The double sort is propagated from slips, taken from the root in March or April ; If plant-

ed in a loomy soil, they will thrive the best. The others may be also increased by the same means, or if they are laid down in the earth like carnation layers.



CYCLAMEN.

THE cyclamen is so called in Latin, French and English, from the root being almost round. It is a plant that produces from the root, leaves that are broad, almost round, of a dark green colour, speckled on the outside, and with purple on the inside : In the middle grow long pedicles, and at the top of which are the single leaved flowers, dividing into five parts, folding inwards. Autumnal cyclamens bear a red flower, sweetly scented. In this season, blows one called the Constantinople cyclamen, which bears the first year twenty flowers ; the second fifty, and the third two hundred ; and all without the least smell. The cyclamen is raised by seeds. The autumn cyclamen should be sown in autumn, and the spring cyclamen in the spring.



SCARLET LYCHNIS.

THE beauty of this plant is such, as to cause it to be ranked among the most elegant parterres. Both the single and the double lychnis are very delightful

in appearance : They bear bunches of scarlet flowers, upon stalks above two feet high, in June and July. They are so greatly esteemed, that gardeners rear them in pots, to decorate the most beautiful parts of their garden, or to be placed, in the summer season, in chimnies, where they prove a most pleasant ornament. The double kind is increased by slips, taken from the root in March. The single flowering kind may be propagated by the same means, or raised in March from seeds, which blossom the first year. An open situation, and a light soil, are most proper for their cultivation.



CROCUS.

THIS early flower, as if anxious to share with the snowdrop in cheering the departing gloom of winter, appears in January and February, but not to be a mere spectacle of beauty ; it produces a most useful substance, which is saffron. The shape of the flower resembles the lily. It possesses an agreeable scent. Considering its cheerful aspect, when few flowers appear, and its producing so valuable an essence, it is rather a wonder it should not be more cultivated in our gardens. The true crocus is rather to be multiplied by the root than by its seed. It requires a rich soil, and ought to be planted in a ground exposed to the fostering rays of the sun.



COLUMBINE.

THIS plant is called *aquilegia*, from *aquila*, an eagle, in consequence of the leaves of its flower being hooked like the beak and talons of that bird. The columbine shoots indented leaves of a blueish green, and growing to long stalks. In the middle, rises a stem of eighteen inches long, which is slender, and of a reddish colour : From this stem sprout several little sprigs, which support a flower composed of five flat and five hollow leaves, coloured with red, blue, white, chefnut and carnation. Columbines require a rich soil and are cultivated by sowing the seeds very thinly in September, in beds well dug, where it remains until the plants are ready to be removed to the plots of a parterre. The columbine is one of those lasting plants which is kept alive by its roots, and will live a long time in the earth, without requiring to be sown again.



DOUBLE MARYGOLD.

THIS plant has been admitted into our gardens, from the richness of the colour, and the beautiful form of the numerous leaves. Nothing can be more splendid than their golden hue. With respect to the disposition of the leaves, they seem as if Flora had particularly disposed them into the form of a crown, for her own embellishment. The leaves are not only beautiful in themselves, but they are allowed, by physicians and botanists, to possess great medicinal

virtues : They are said to cheer the spirits, by their infusion, as much as they cheer the sight by their appearance. Their flavour is likewise so agreeable, as to have caused it to have been mixed among the herbs that are usually boiled in our broths and soups. Thus after delighting us in the parterre, they heighten the delicacies of our table.



BELVIDERE.

FROM the leaves of this plant, resembling those of flax, it is called in Latin, *linaria*, from *linus*, which signifies flax. It rises into several stems, two, three, or four feet high ; and shoots into many branches, garnished with strait, oblong leaves, of a light green colour. At the extremities of these boughs appear single flowers with irregular leaves. These plants are of use in little courts, where they are set two feet distant from each other, in borders raised for the purpose ; or in pots, placed in symmetrical order. The belvidere is multiplied by seed, sown in plain ground, in any part of a nursery ; from whence it is removed, as soon as it is strong enough to be replanted. As the air injures the root, it should be replanted the moment it is taken from its native soil, and watered immediately.



PRIMROSE.

THIS flower very early graces the lap of nature. Its golden leaves are frequently seen rising from the snowy beds. So welcome is this flower to man, that in Europe it is frequently reared in pots; which are placed to adorn the windows, when scarcely any verdure is to be seen abroad. When planted, it should be placed in good garden mould, and in a warm situation, among the smallest flowers, or else to edge the compartments of the parterres with its golden tresses. As no flower is more cheering, or agreeable to the sight, it generally graces the most choice and beautiful gardens.



FLOWER OF PARNASSUS.

THIS plant is called *parnassia*, or *gramen parnassi*, by botanists, from its being found on the mountain of Parnassus. It bears leaves very like those of the violet; from amidst these leaves rise several stems, about six inches high: On the top is a rosy flower, composed of several unequal leaves, fringed, and disposed in a circle. This plant is annual, and consequently multiplied by seed, which should not be thrown too thick. It thrives best in a fat, moist earth; and is cultivated like those other plants that are sown in hot beds in March, and which are consequently to be secured from the cold by glasses, straw, or matting. This flower is not only a great beauty in parterres, but in pots, or very large tubs, where it appears to equal advantage.

WALLFLOWER

IS called by some, the yellow gillyflower. It consists of both single and double flowering kinds. It shoots out leaves of a dark green colour, that are pointed at the end : Between these leaves, grow several branchy stalks ; on the top of which, appear the flowers, composed of four, and sometimes more leaves, of a yellow colour. The single wallflower is multiplied by seed, and the double by layers, or slips.

This flower will grow every where ; even upon walls, or among rubbish : But, when cultivated, more care should be taken of them, as they will prove an agreeable ornament to borders, or any other parts of a garden not destined for more choice flowers.



BLUE BELL.

THE blue bell plant shoots forth stalks two feet and a half high, which are hairy, and furnished with leaves : These are oblong, broad, and pointed at the end, notched at the edges, and downy ; along these stalks, and at the stems of the leaves, the flowers grow, in form of bells : These blossoms are blue, notched at the brims, and divided into four parts ; each is supported by a calyx, or little cup, divided likewise into five parts. This flower delights much in the soil of a kitchen garden. It is multiplied by sowing the seed, as thinly as possible, on the end of a plot well dug, and smoothed on the surface. The time of sowing is September and October, and that of flowering is July.

SUNFLOWER.

THIS plant is called turnsol by the Italians, which turning towards the sun: It is therefore called turnsole by several of our botanists. The cause of its turning towards the sun, is from the flower being heavy, and consequently inclining the stem to that position it is liable to, from being warped by the rays of this luminary.

The sunflowers are of two sorts: One produces a stem between five and six feet high, which is very strait and branchless, with leaves nearly as large as those of the vine, jagged, pointed and rough: On the top of this stem appear the flowers, resembling the sun. Care should be taken in what part of a garden it is planted, lest it should choke the flowers growing near it. The places most proper, are the broad allies planted with trees, and between which the turnsol may be planted at three feet distance.



INDIAN PINK.

ALTHOUGH this plant has a strong smell, yet it is raised in our gardens, for its beautiful flower. The Indian pink shoots into a stem, about eighteen inches high, and then divides into several branches, full of leaves, indented and pointed. At the extremity of each bough, appear radiated flowers, round, composed of several well formed leaves, which are of a yellow colour. The disk consists of several flourishes, divided into many parts. These flowers have likewise

crowns, composed of half flourishes, placed in a cup, of one leaf. The Indian pink requires much the same management as the female balsam apple. The cold injures them very materially. This plant is very proper in all the compartments of our parterres : But they should not be placed among plants of the smaller size, nor in the middle of beds ; for, by such a situation, the great beauty of these pinks would be lost to the spectator.



LUPINE.

LUPINES consist of three sorts ; the great blue, the small blue, and yellow flowering species. They also blossom in May and June. The first sort grows to about two feet high ; and the two latter, about half the height of the former. They are a flower that is seen in most gardens ; and are remarkable for their neatness of blossom, and simplicity of colouring. The yellow species possesses an agreeable scent, which is denied to the other sorts, that however are recompensed, in general, with a greater brilliancy of colouring.



CONVOLVULUS.

THIS plant consists of three species, called the major, minor, and the scarlet flowering kind. The major has a flower of a rich purple colour ; the minor

displays a flower of a delicate hue, between a sky and a marazine blue : This species is sometimes variegated with the colours of yellow and white. The scarlet flowering kind is distinguished for bearing a flower, of the colour from which it derives its name. But that which most particularly characterises the convolvulus, in all its three species, is the flower, consisting of a single leaf, which is a remarkable instance of the variety nature displays in every part of the creation, when contrasted with the ranunculus, and other flowers, that are composed of such a multitude of leaves. The convolvulus blows from June until August ; and, as a picture of humility, creeps upon the ground.



ASPHODEL.

THIS plant, from its appearance while blooming, being similar to a royal spear, is called in Latin, *bastula regia*, i. e. king's spear. The stem of the asphodel is three feet high. In the middle of it grow, up to the top, a great number of single flowers, each divided into five parts. It thrives in every sort of soil ; is multiplied more by roots than seed ; and, if well watered, will afford most beautiful flowers. The asphodel is considered as a great ornament to a border, or any other part of a garden, where dwarfs, or tall flowers, are raised. It should be set three inches deep, and a span distance from each other, or from whatever flowers may be in the same compartments.

FOXGLOVE

IS a large flower, resembling a thimble worn on the finger: From the root grows a stalk, two, and sometimes three feet high; and is hairy, and of a reddish colour: The leaves are oblong, and pointed at the end; covered with a little hair; indented on the edges: The outside is a brownish green, and the inside of a silvery white. On one side of the chief stem sprout several footstalks, which support single flowers that are wide at top, and are cut into two lines: Their colour is generally purple, although they have sometimes a mixture of hues. In the middle of the cup is a chive, which adheres to the hind part of the flower. A light soil agrees best with this plant. The seed being very small, should be thinly sown in September. Foxgloves flower in June. Being tall plants, they are only adapted for the borders of beds, where the larger species of flowers are set or planted.



HEART'S EASE.

THIS flower, by the Latins, is called *viola tricolor*, from being adorned with three colours. It bears stems which have a tendency to creep along the ground; and are full of leaves, and rather oblong: The stems branch into boughs; at the top of which grow the flowers, which are placed under the species of violets, composed of five leaves, from bearing a cup divided into five parts: Each flower is white, blue and yellow coloured. It is multiplied by seed sown

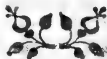
in beds as thinly as possible. When sufficiently raised, it is removed into pots, where it makes a more agreeable appearance than it does in its native humble situation, where it is lost and overlooked, like modest merit, amid its greater and more splendid neighbours.



AURICULA.

THIS flower has been the greatest pride of all gardeners. One root of it has sold for twenty guineas. These flowers are indeed very delightful, both in scent and beauty. They blossom in April, and are in full bloom about the 20th of the same month. The numerous variety of their flowers, are distinguished by the names and titles of eminent and exalted characters: Thus, it has been not unaptly observed, that, as auriculas increased so fast, and great men, if possible, decreased faster, in a short time names of distinction would be wanting to denote their differences. The goodness of an auricula consists in a strong flower stem, short footstalks, large regular flowers, full, round and white eyes; and that the flowers themselves may be flat, not the least inclining to cup.

The culture being particular, we refer our readers to Bradley's new improvements in gardening and planting.



VIOLET.

THE violet produces, from its root, tufts of leaves almost round, indented on the edges, and of a beautiful green. In the middle of these leaves grow the flowers, consisting of several irregular lips, shaped like a butterfly: The two uppermost resemble a stand; and those on the side are like wings; and the two lowermost are formed like a little bark. Thus curiously formed, it has been equally the pride of the peasant, prince and poet. It is one of the most early beauties with which Flora presents reviving nature. It grows in any sort of ground, and is particularly pleasing upon the borders of small gardens. The flower is as agreeable to the smell as to the sight, which has caused it to be so universal a favourite. It should be replanted every three years, and kept from weeds, which is the chief trouble the culture of the violet requires. The double violet is only that which is raised in our gardens.



PINK.

THIS plant shoots long, strait, thick, hard leaves, of a blueish green. In the middle rises the stem, long, round and jointed at a certain distance: On the top of this the flowers grow, consisting of several variegated leaves, supported by a hollow membranous cup. Such is reckoned the beauty of this flower, that it has been the first study of the most eminent gardeners, to raise them in the greatest perfection.

Volumes have been written on their cultivation ; and, as the flower is so well known, we shall only add, that pinks are set indifferently, either in open ground, upon beds, in earthen pots, or in tubs, in Autumn, or the month of March. They are one of the chief ornaments of all gardens; and are remarkable for the variety, beauty and excellence of the flower.



AUSTRIAN ROSE.

THIS plant has, like other roses, a prickly stalk, which is garnished with winged leaves of an oval form, and their lobes sawed. The flower consists of petals that are indented at the top, and which have one side red and the other yellow. It being a shrub, it may be propagated from the suckers that grow from the roots, or from the offsets, either in spring or autumn. It blossoms during the months of July and August. Although this flower is much cultivated, yet Miller, observes, that it is only an accidental variety of the rose considered as a genus. Among the many species of roses, this is cultivated as one of the most valuable embellishments of a shrubbery.



HELLEBORE

GROWS wild in Italy, Austria and Lombardy. It thrives best on high situations. It has a plain stalk, ungarnished with leaves, until it produces the blossom

on its summit : The flower is yellow, and composed of five or more petals. The root is fibrous. This plant should be propagated by offsets, and the roots should be taken out of the ground, and transplanted. When their leaves decay, which is generally from the beginning of June to October, the roots should be planted in small clusters, in order to improve the appearance of their blossoms. If planted alternately with snowdrops, their effect will be the more agreeable, as they flower about the same time.



IRIS.

THE bulbous iris shoots forth a stem, formed of long, broad leaves, that are soft, and of a pale green colour. In the middle grows a stalk which bears, on its top, a single leaved flower divided into six parts ; and, in the centre of the flower, is a chive of three leaves arched. Their flowers are either white, yellow, blue, red or ash colour, and are most beautiful in appearance. They are multiplied both by their seed, and by bulbs. When the seed is to be sown, it should be gathered in July, and preserved until September. before it is committed to the soil ; and whatever colour the seed is, you may expect to have a flower arise from it of the same hue, which is a circumstance peculiar to the iris, and may account for its name, which is derived from a Greek word signifying to foretell or presage ; for the seed thus foretells the colour of the flower.

NASTURTIIUM.

THE NASTURTIIUM INDICUM, or Indian cresses, are of two sorts, one large, and the other small. The large sort is known by the name of monk's hood: It has flowers, variegated with yellow and scarlet: They run upon the ground, and blow from May to September. This plant is raised with little care. The seed, being large, is sown in separate grains, at four inches distant from each other. The flowers of monk's hood grow upon small reddish stalks, and are composed of several irregular leaves. The stem is covered with leaves; which are sometimes round, and sometimes angular. The small sort of nasturtium is frequently eaten as a pickle; but the larger, which is monk's hood, is considered as poisonous.



HOLLYHOCKS

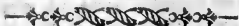
CONSIST of several sorts. They have a large stem, that rises about six feet high; which is decorated with flowers, in the same manner as the other flower plants are decorated with leaves. The flower blends the delicacy of the poppy with the richness of the rose. The colours of these flowers are various; as the red, white, purple and black. Although the stems of the hollyhock are so strong and large as to grow six feet high, yet they wither every winter to the ground. Their seeds are sown in March, in the natural earth; and notwithstanding they lie not long in the ground, they produce no flowers until the next

year. They may be transplanted about March or September. The time of flowering is in July and August.



LILY OF THE VALLEY.

MANY are surprised that this plant should be called a lily, as the blossom has not the least resemblance to that flower. Of this plant there are two sorts ; the white and the large leaved lily. The first has a stem a foot high, bearing three long, large, smooth, green leaves : The stem, from the middle upwards, is adorned with flowers almost round, white, very fragrant, and fastened to a small sprig. The second only differs from the first in having red flowers inclining to white, and not having so agreeable a scent. The lily of the valley is only multiplied by slips taken from the plant and roots. This plant, first arising in a valley, thrives no where so well as in shady places ; for which reason, it is never set in the walks, but in some private part of the garden, where it is reared for the sake of its flowers.



CROWN IMPERIAL.

THIS plant has a stem about two feet high, which is surrounded with long, pointed leaves, growing immediately from the root : The stem is likewise gar-

ished with small leaves, growing in pairs, without any footstalk. Upon the top of the stem is the flower, composed of several green, upright leaves that appear to grow from the germ of another flower, formed of yellow inverted leaves, in a figure somewhat resembling a turban: Amid these leaves are seen stamina, with white anthera, which hang down in a graceful manner. The anthera resemble dewdrops, falling from the filaments of the stamina. The crown imperial is propagated from its bulbs, which should be taken out of their mould in June, well cleaned, and carefully stored till September; when they should be replanted. It blossoms chiefly in March and April: During these months, its singular beauty, and graceful dignity, form one of the chief ornaments of our most elegant gardens.

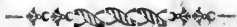


HYACINTH.

NEXT to these follows the hyacinth, with all its virgin beauties: There are so many sorts of them, and so different in colour, that nature seems to have taken pleasure in forming them, and rendering them more admirable by variety. As we are noticing the more early flowers, we have to observe, that the winter and spring hyacinth is blue, and odoriferous. It is little, round, and of a single colour. Hyacinths, like many other flowers, are multiplied by seed. The bulbs that are produced from the seeds, bear no flowers until the fourth year. The greatest part of hyacinths delight in places that are exposed to the sun, and apart from other flowers. Like animals that herd together in flocks, hyacinths are, by nature, most adapted to grow in clusters, by themselves.

MARTAGON.

THE martagon, or mountain lily, consists of several sorts. The great martagon has a red flower, growing on a stem between two and three feet high, without any footstalk. It is smooth to the touch, and of a deep green: The flower is crooked, and bends down at the end of the stalk, which supports it from falling. The plant may be set in any soil. It must be planted a span deep in the earth, and the same distance from any other flowers which it accompanies. It is set among flowers of the larger size, or rather in the middle of borders, with flowers smaller than itself. The martagon blooms in May. The bulbs should not be removed before you intend to transplant them. Being sooner affected with heat than cold, the bulbs should be sheltered from the sun with little layers of earth, or preserved from summer heat by frequent waterings.



SWEET PEA.

THIS plant is frequently introduced into gardens from the sweetness of its scent, and the delicate beauty of its flowers. It is generally set with another, called the painted lady. The flower of the sweet pea is exactly the same as the common pea blossom, except being purple instead of white. The flower of the painted lady is pink and white. They are both raised from seed, which is sown about the time of the

other pea. They blossom mostly in July, and are no little decoration to those parts of a garden allotted for the irregular beauties and simplicities of nature.



POPPY.

THE garden poppy has a stalk about two feet high, which supports a flower distinguished for its delicate texture, beauty and variety of colour, and its somniferous odour : But although the flowers are so agreeable in appearance, they are of short continuance. They should be sown in spots, in order to afford an assemblage of colours, their variety of hue is so well calculated to afford. This flower is said to yield a substance which is generally sold by our apothecaries as opium. The Dutch wild poppy does not blow so high as the former : The flowers are red and white striped, and bloom during the months of June, July and August.



MEZEREON.

THIS plant is of two sorts : The red and white flowering. The red is very common in gardens ; but the white mezereon is rather scarce. They are both dwarfs, and seldom rise higher than three feet :

Their stalks are ornamented with flowers so early as January, when the air is perfumed with their agreeable odours. They remain a long time in blossom, and are much adorned with the beauty of their fruitage. The only mode of propagating them, is by sowing their seeds in March. This plant may be profitably introduced into parterres, as a show flower, or in wilderness works, for its delightful blossoms. But they are adapted chiefly for a winter garden.



HONEYSUCKLE

IS a shrub, which shoots forth several branches, that expand on every side, and support themselves by twining round whatever is within their reach. At the knots of the branches, the leaves grow in pairs, opposite each other, at equal distances: They are soft, broad, pointed, green without, and white within. At the end of the branches the flowers grow, in the form of pipes, bending in a manner somewhat similar to a crown. The peculiar form of the leaf, an agreeable diversity of colour, and the aromatic odor it dispenses around the gardens it decorates, render the honeysuckle one of the most desirable appendages to every spot where the bounties of Flora are collected for human delight.

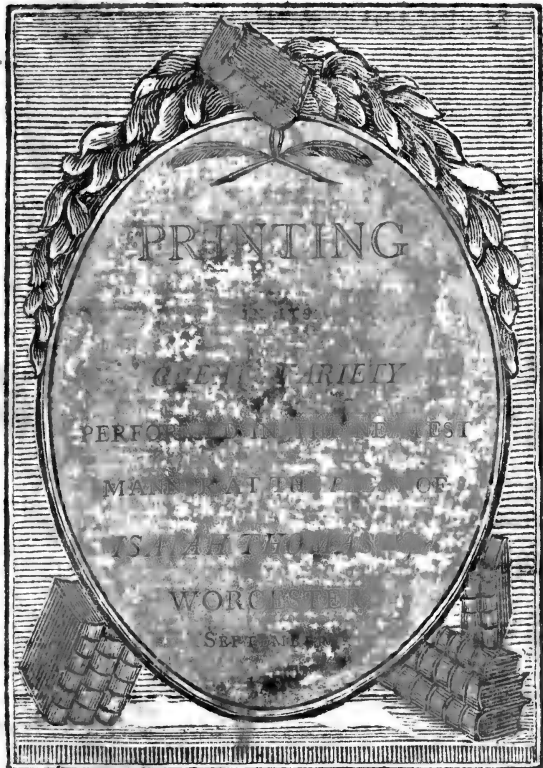


Francis Easton

ST. JOHN'S WORT

GROWS on a thin, leafy stalk, about a foot high. From the chief stem grow many branches, which are garnished with long, small, pointed and plain edged leaves. On the top of each of the smaller branches, is a yellow flower, which greatly resembles the daisy, both in size and form. If reared in a green house, this flower will blossom in March : But, if cultivated in a garden, the usual time of flowering is in June ; when it may be gathered for medicinal purposes. St. John's wort is reared in most physic gardens, from its possessing qualities that greatly assist the cure of the jaundice : It is likewise a chief ingredient in that valuable balsam so well known by the name of Friar's balsam, or Turlington's drops.





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The above work with the exception of a few pieces, has been selected from a variety of the best *Dramatic Writings* in the English Language. No pains has been spared to make the Selection useful and pleasing. Several of the Dialogues have never appeared elsewhere, in the present form, and for the one between *Lindor* and *Florimel*, on the comparison of *Ancient* and *Modern Virtue*, the Editor is indebted to a classical friend whose name he is not at liberty to mention. No recommendation has been solicited, to give the work currency. If any merit is attached to it, the discernment of Preceptors in particular, and the public in general, the Editor flatters himself, will properly rate its worth, and give it circulation accordingly.

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EXPLANATION
OF
SCIENTIFIC TERMS
OCCURRING IN THE
FOLLOWING SUBJECTS OF
NATURAL HISTORY.



ABDOMEN, the belly. — **AURELIA**, the state of the insect, while changing from the worm to the moth, fly, or butterfly. — **APTEROUS**, without wings. — **ANTENNÆ**, horns, or feelers. — **CHRYSLIS**, the same as aurelia. — **CRUSTACEOUS**, covered with a shell, or a substance similar to a shell. — **CAPITULUM**, a little head. — **ELYTRA**, the cases of the wings. — **FORCEPS**, the forked tail of an insect. — **GENUS**, several beings agreeing in one common character. — **HYMENOPTERA INSECTA**, insects having four membranous wings. — **INDIVIDUAL**, a being considered separately from others of the same species or kind. — **LARVA**, the worm or caterpillar. — **LOBE**, a division, or distinct part. — **LAPIDOPTERA INSECTA**, insects having four wings. — **MEMBRANEOUS**, consisting of a fibrous web. — **MAXILLA**, the jaws. — **NYMPHA**, see Aurelia. — **NEUROPTERA INSECTA**, insects with four transparent wings. — **PALPI**, spiral tongues. — **PORRECTED**, stretched out. — **RETICULATED**, formed like net work. — **SCARABÆUS**, the beetle. — **SETACEOUS**, covered with bristles. — **SPECIES**, a common nature, by which several individuals are distinguished. — **SPINE**, a thorn. — **THORAX**, the breast. — **VERMICULA**, the nature of the insect before it begins its transformation.

AUTHOR'S

ADDRESS TO THE PUBLIC.

A NEW MORAL SYSTEM of NATURAL HISTORY *composes the following Volume, treating of QUADRUPEDS, BIRDS, INSECTS, TREES, SHRUBS and FLOWERS. This engaging subject, much as it is neglected, is of all others, the most necessary to finish, a polite education, imperceptibly, as it softens and humanizes the mind, while, by leading us to this sublime truth, that nothing is created in vain, we obtain, what ought to be the ultimate object of all our pursuits, a knowledge of GOD, of ourselves, and of the beings he has formed for our use, support and protection.*

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The proprietor has only to observe that the success, which has already attended his endeavours to promote the love of virtue and knowledge in the above Work, has far exceeded his most sanguine expectations. He begs leave, in gratitude, to declare, that no trouble, no expense, have been spared to render the present enlarged Edition, a Work of lasting utility to the rising generation, and an agreeable useful pocket companion, to all who wish to acquire a knowledge of the above important and interesting subjects. By

The Public's obliged and devoted servant,

GEORGE RILEY.

FROM THE

LONDON REVIEWS.



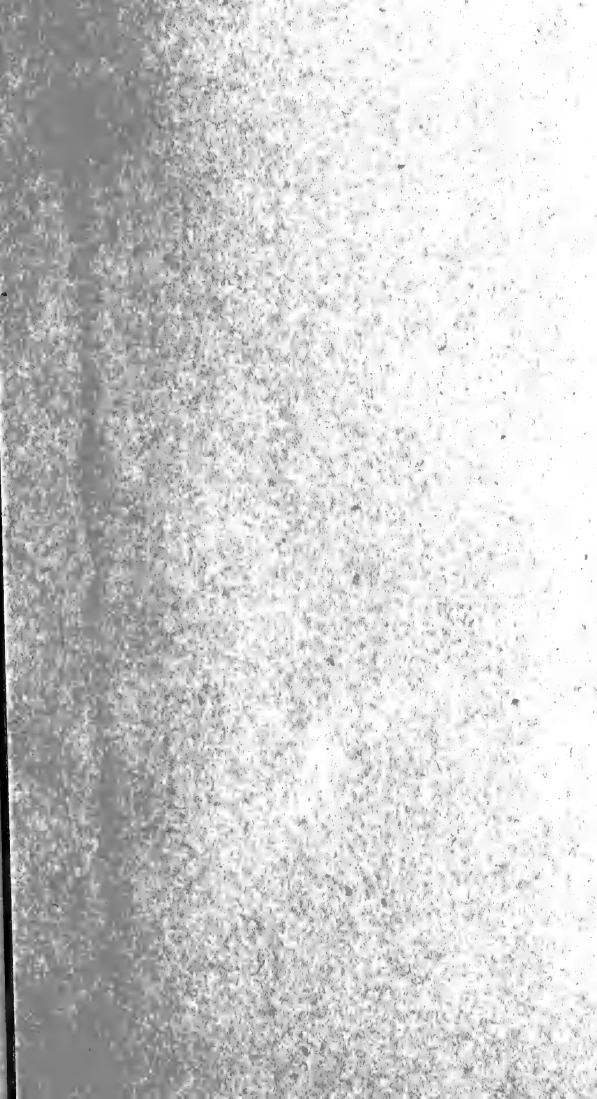
WE acknowledge, with real regret, that the present system of female education is too imperfect and confined ; and we earnestly look and long for that happy period, when the minds of Nature's fairest Works will not be shackled by an improper course of education, and when the gratification received by solid instruction will effectually induce them to bestow on their children, the valuable acquisition of a well informed mind.

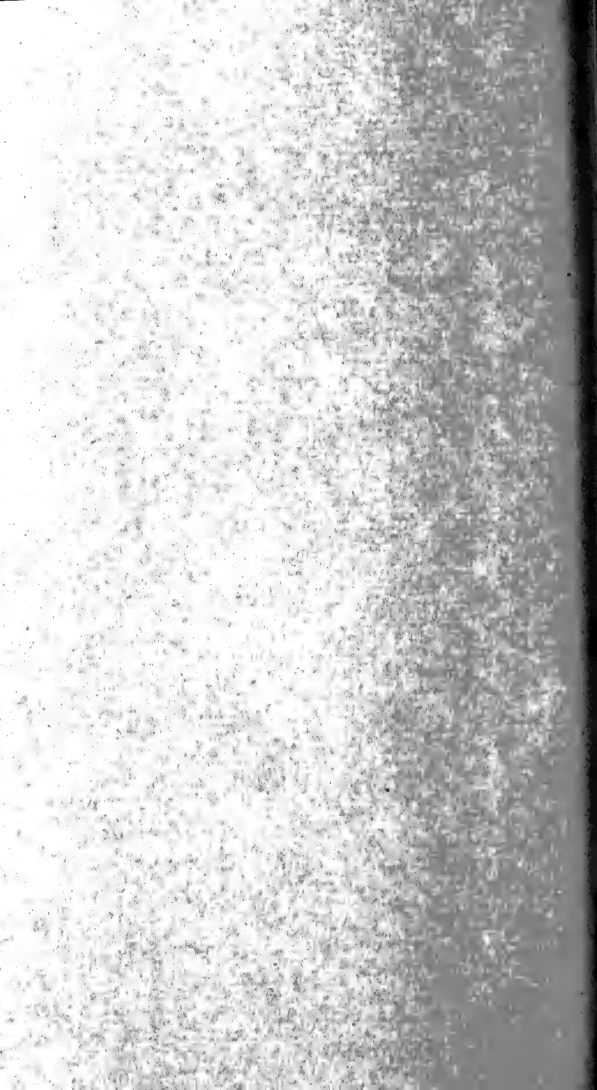
To remove, in a great measure, the force of the above argument, is, we think, one of the leading purposes of this valuable publication. Here useful knowledge is collected, classified, and expressed in the most concise, simple and easy manner.

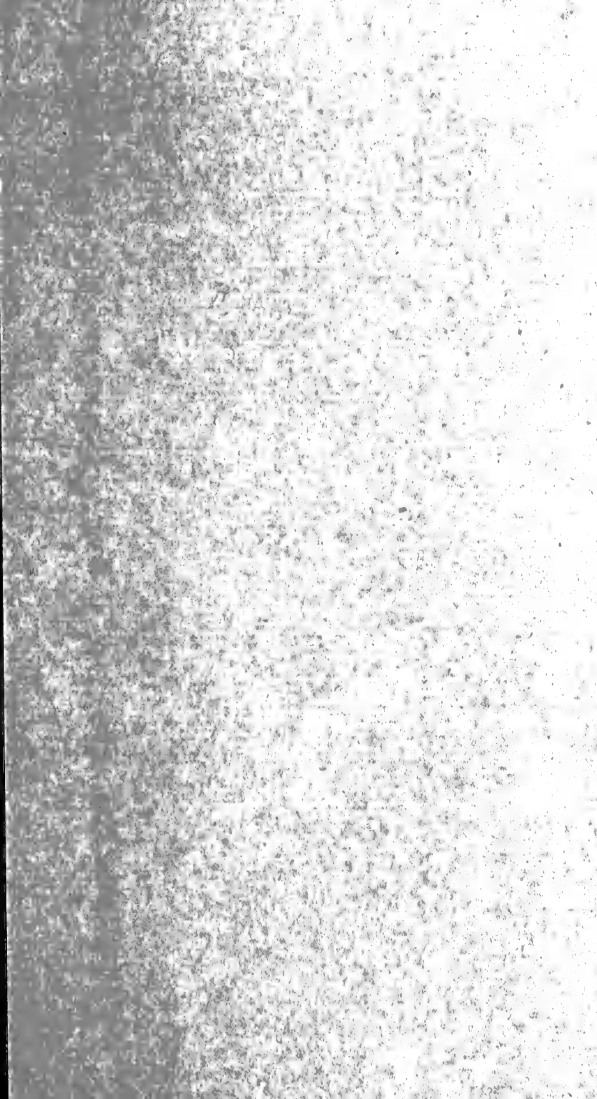
ITS object is to serve as a key to open the mind to extensive views of the natural and moral worlds, and to lead youth to admire the wisdom, and adore the goodness of GOD ; the first grand and valuable principle of every thing virtuous and praise worthy. We therefore heartily recommend it to the use, not only of children, but of parents themselves, as a publication which, in every respect, does the head and heart of the editor the highest honour.

THE EDITOR of the BIOGRAPHICAL MAGAZINE
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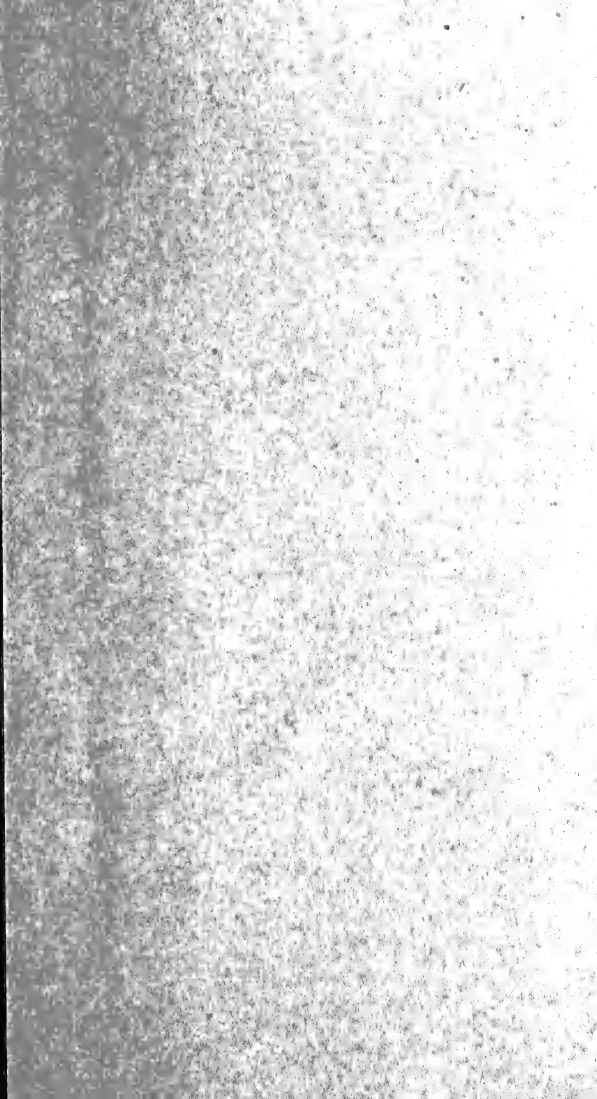
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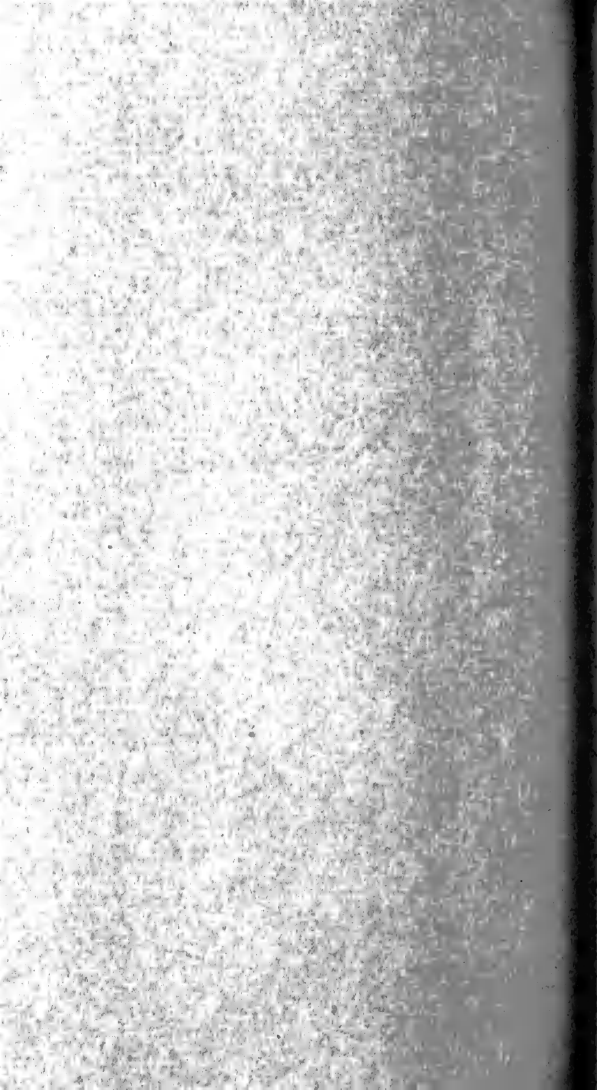


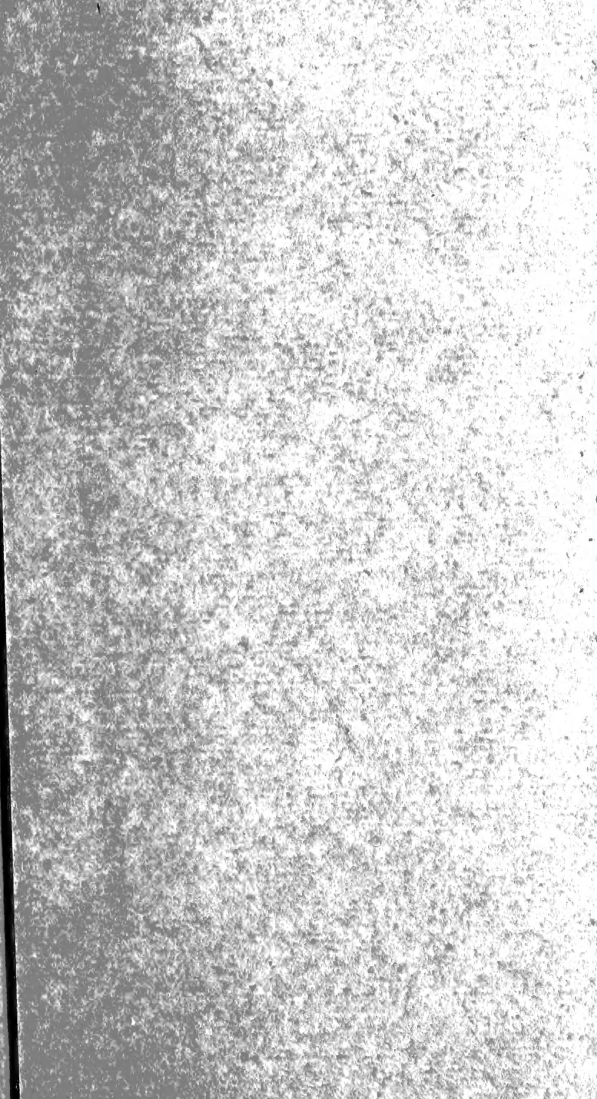














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